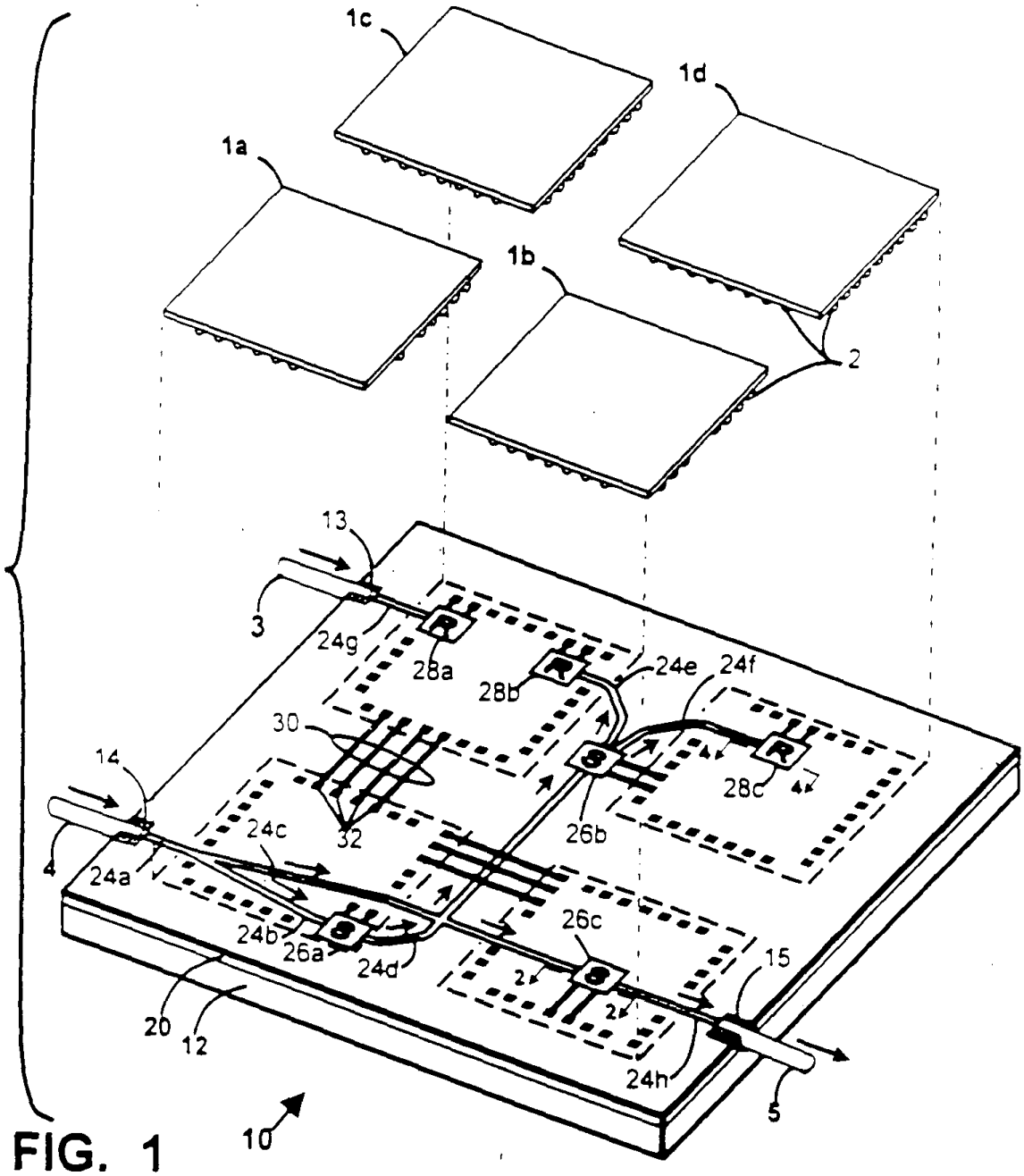


FIG._1

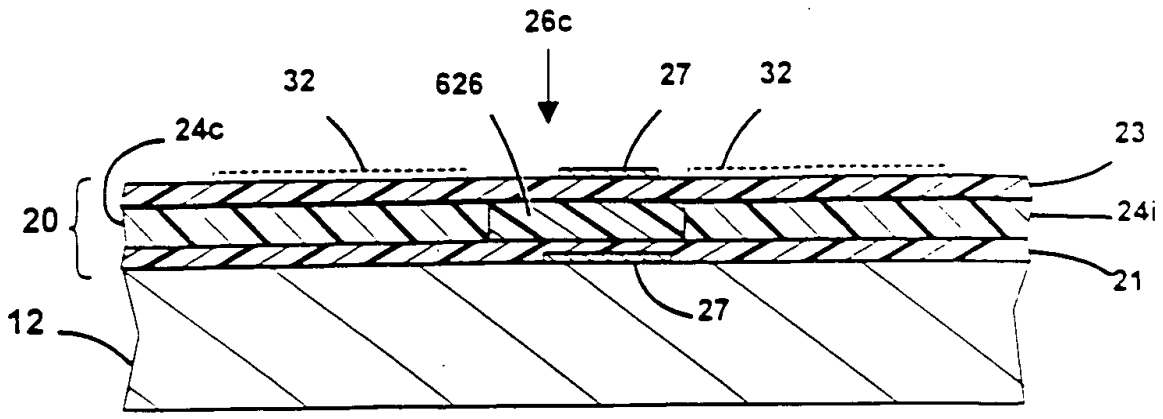

26c
32
626
27
32
24c
23
20
24i
21
27
12

FIG._2

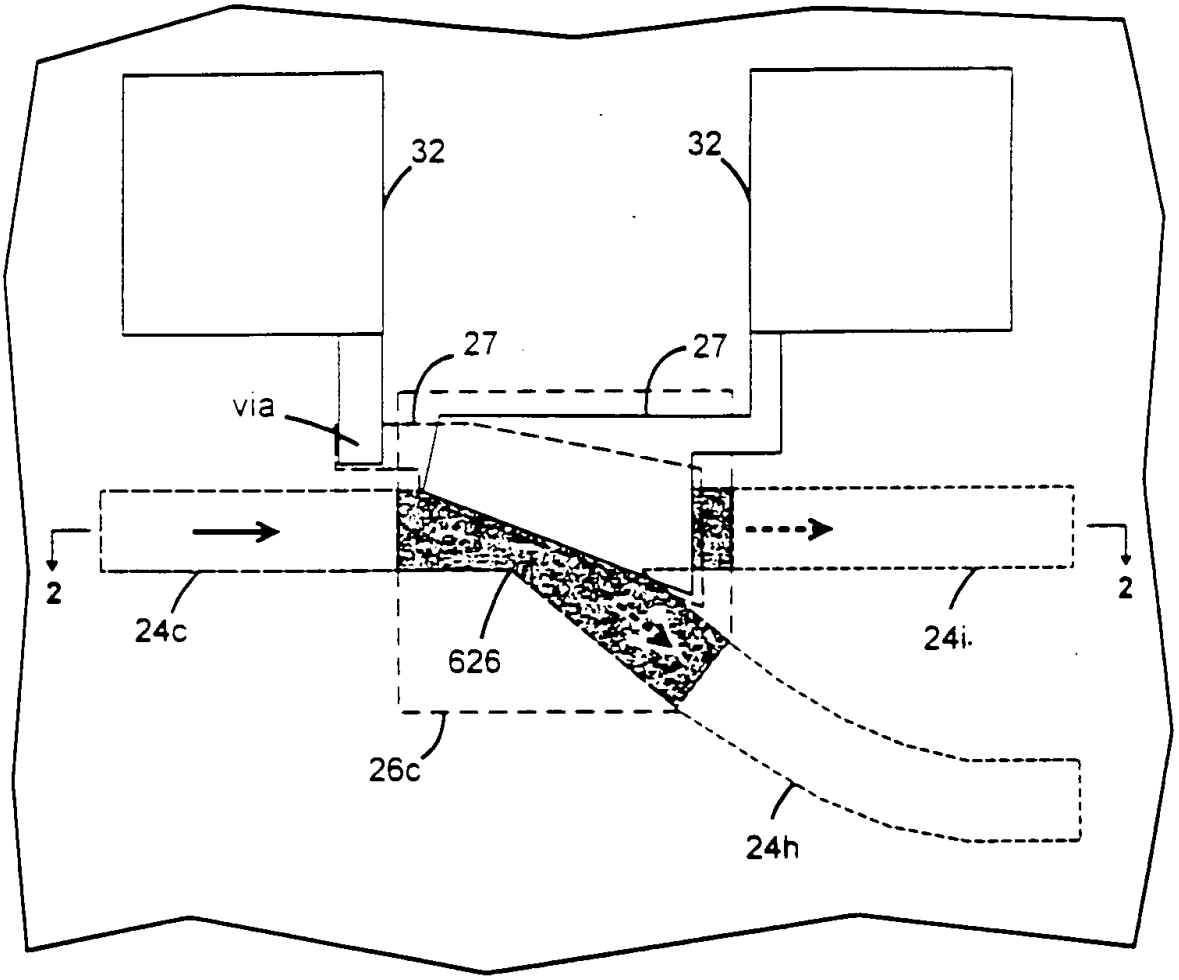

32
32
27
27
via
2
2
24c
626
24i
26c
24h

FIG._3

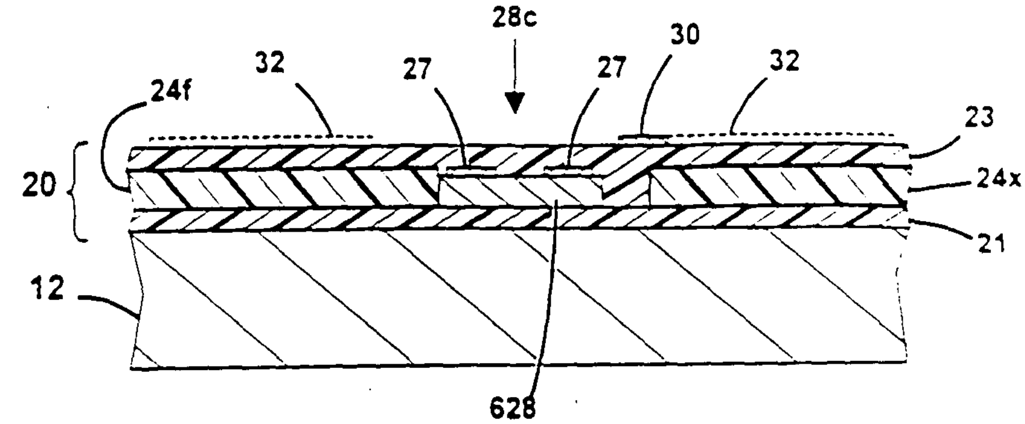


FIG._4-1

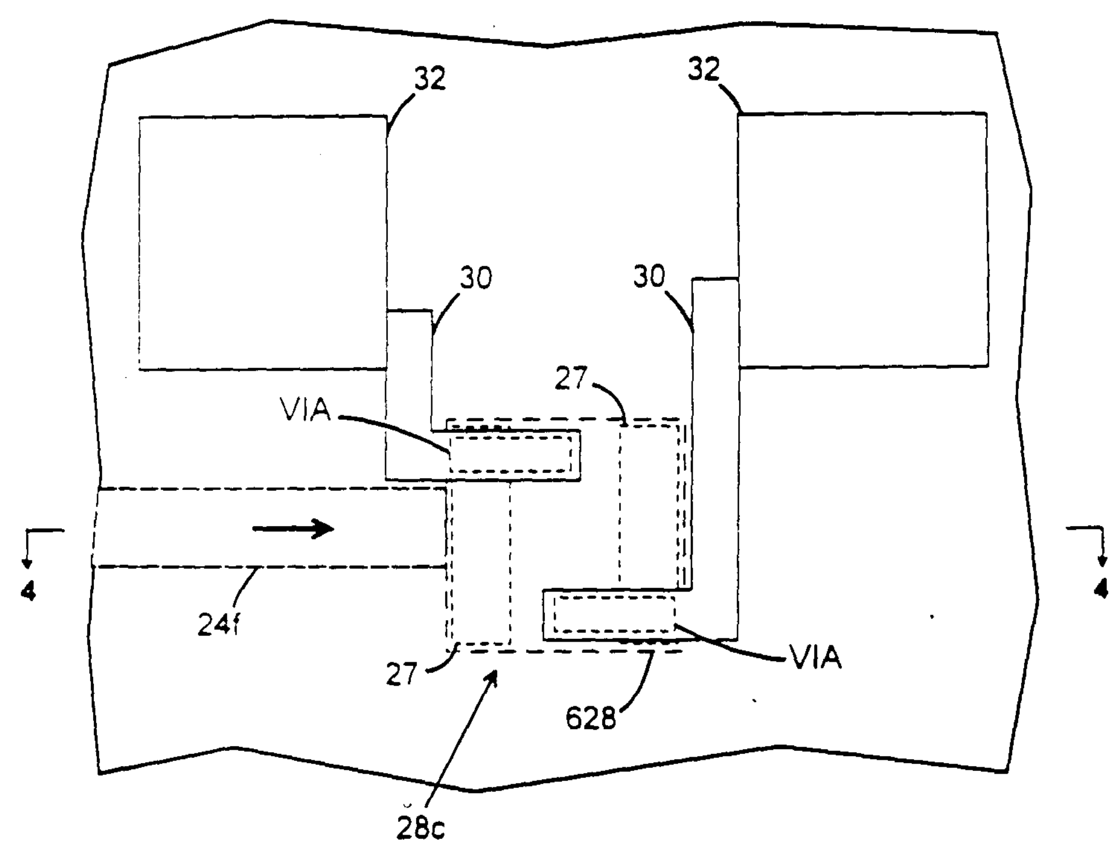


FIG._5-1

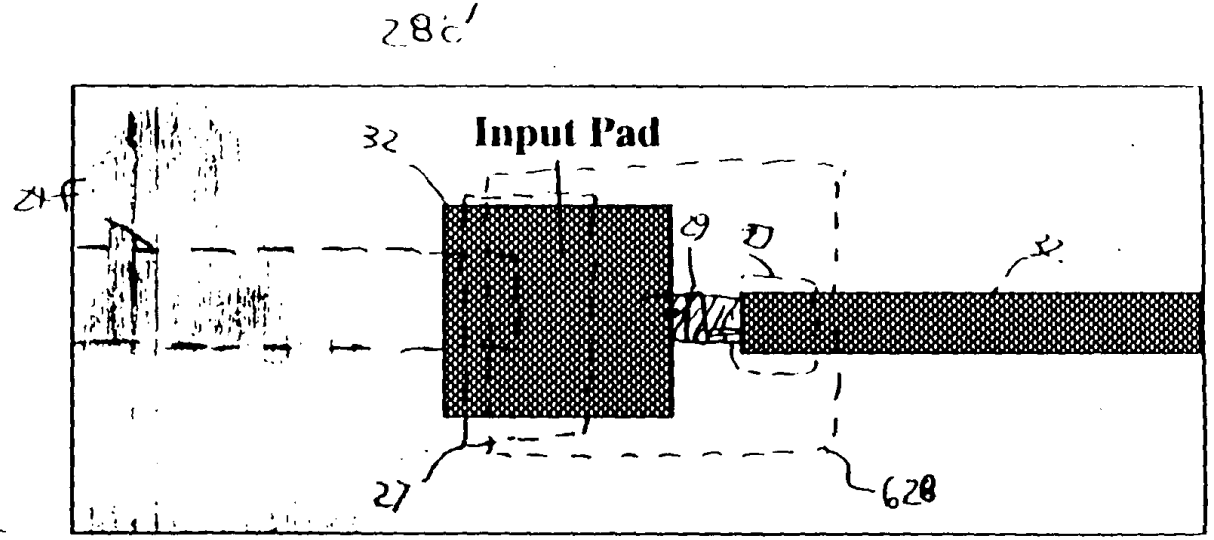


Fig. 5-2

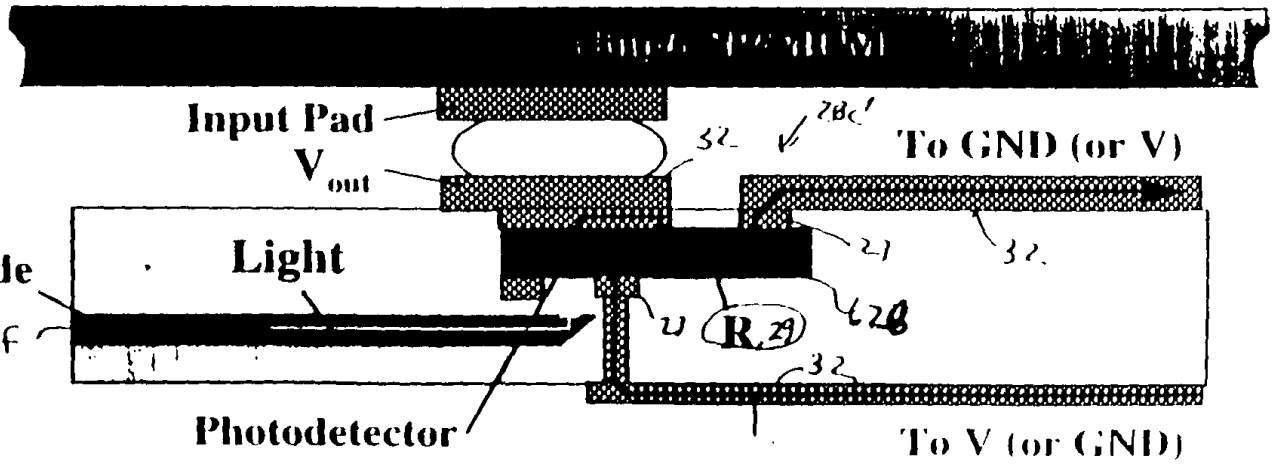


Fig. 4-2

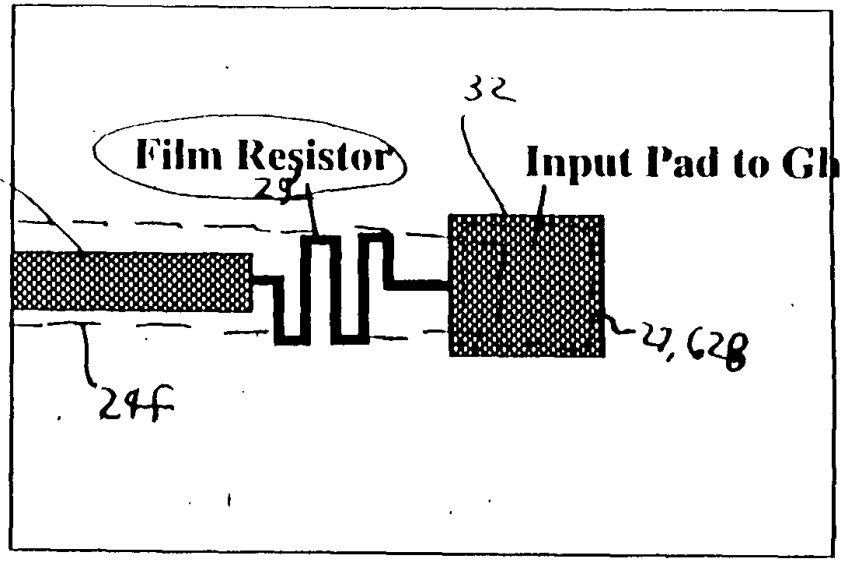


Fig. 5-3

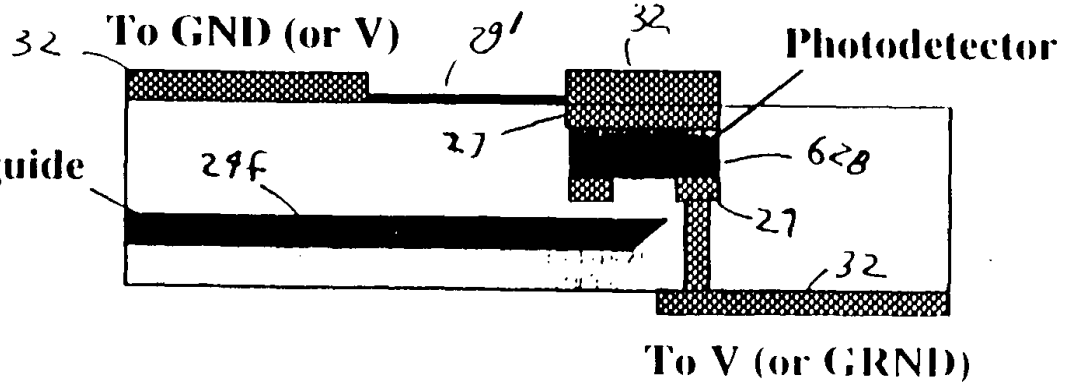


Fig 4-3

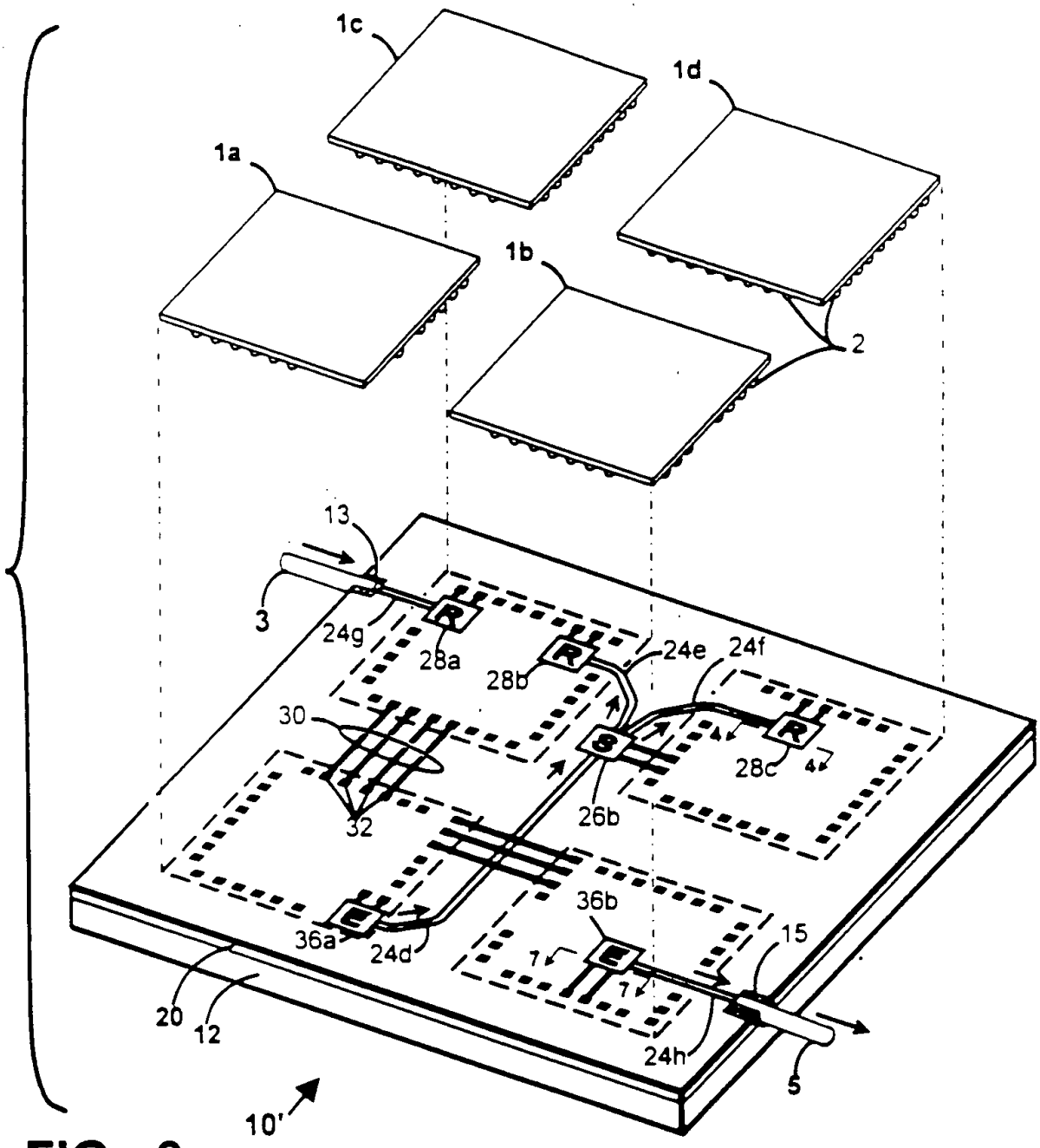


FIG._6

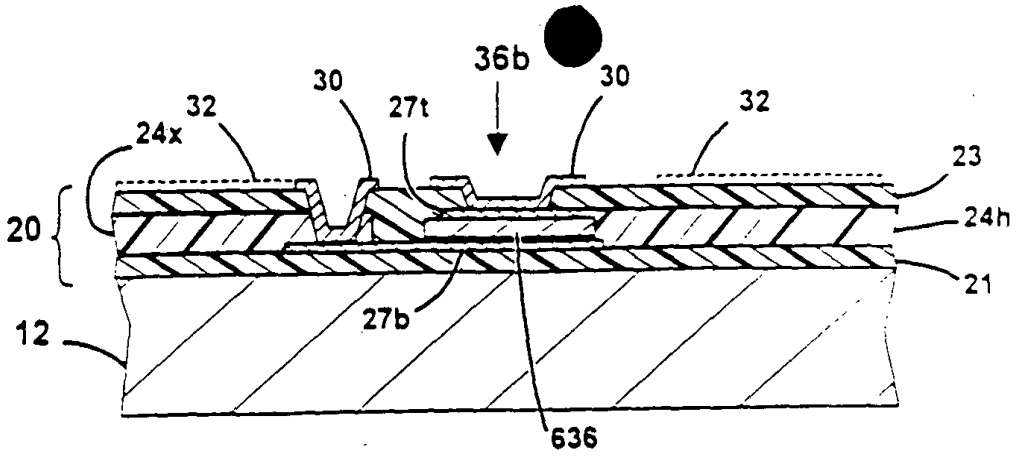


FIG._7

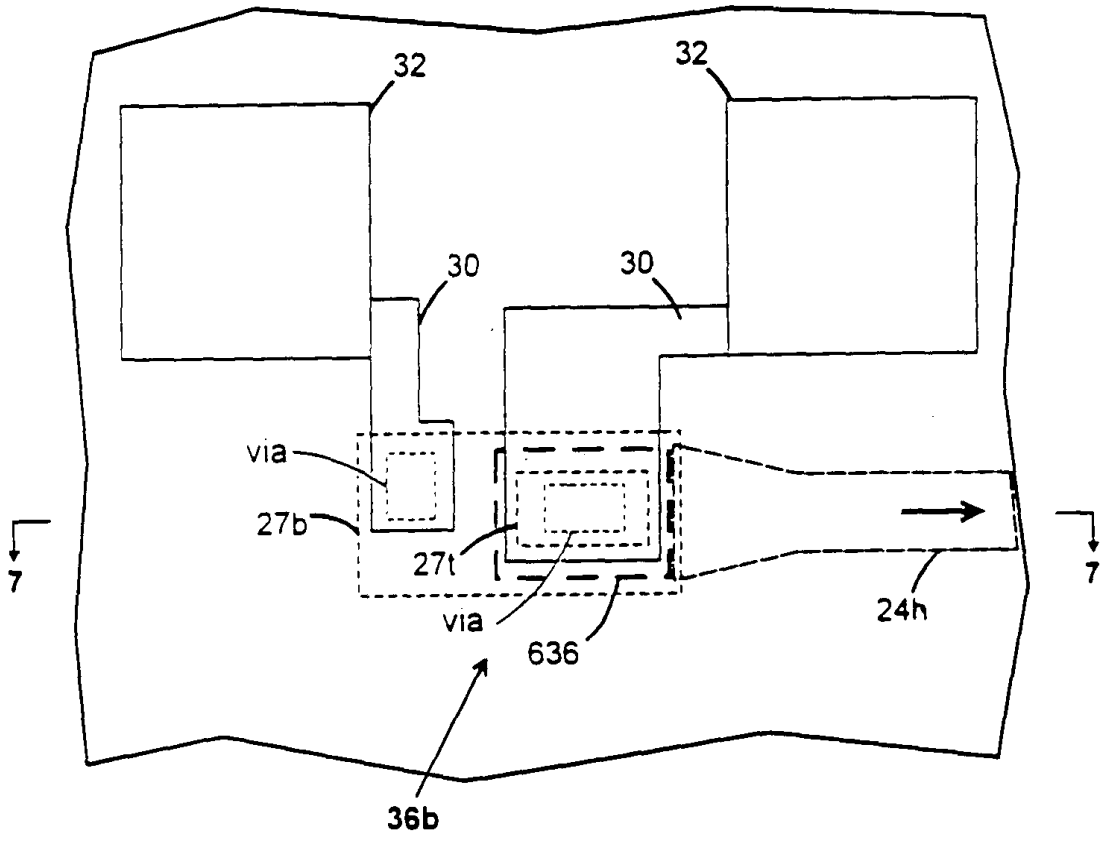


FIG._8

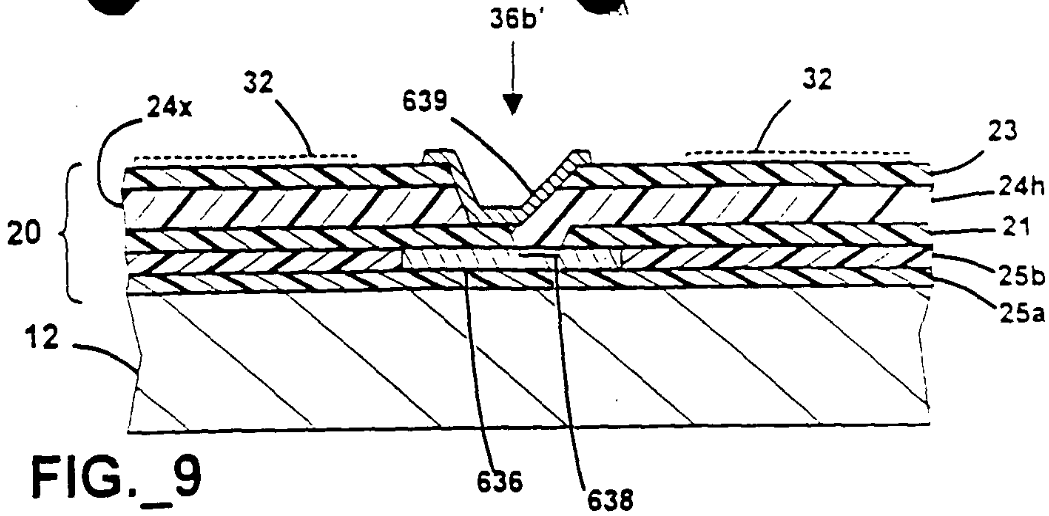


FIG._9

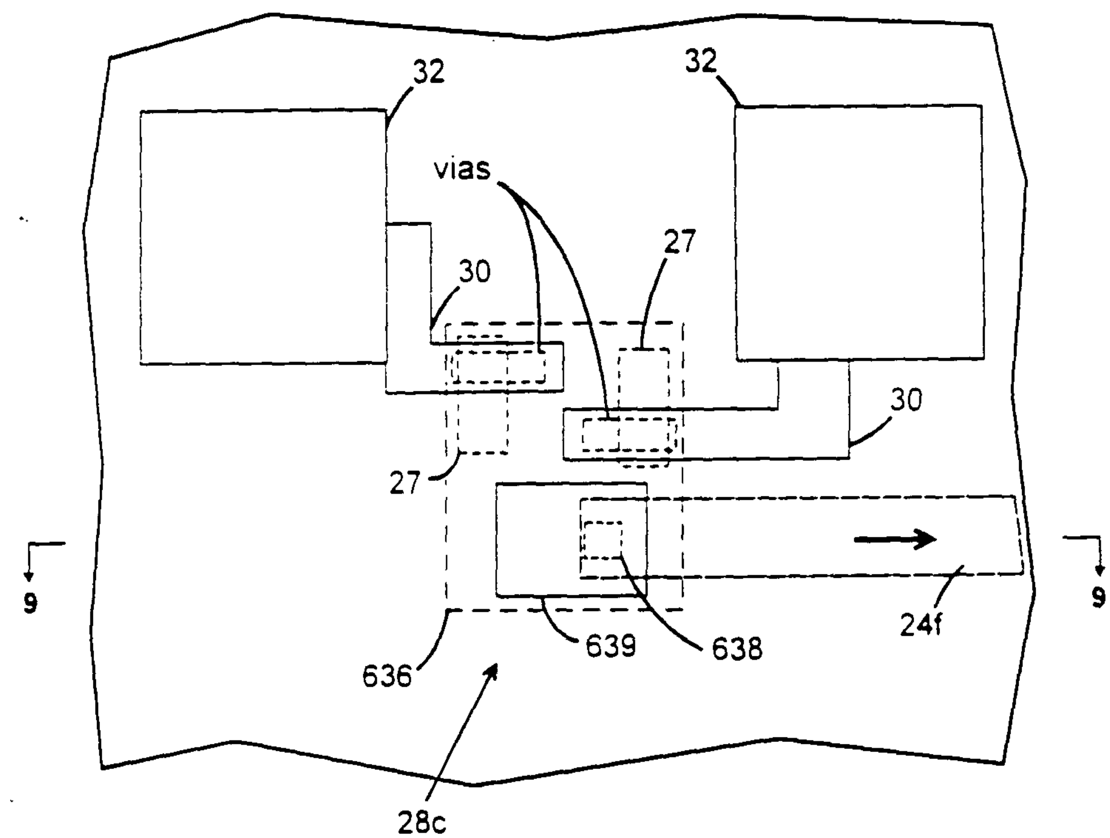


FIG._10

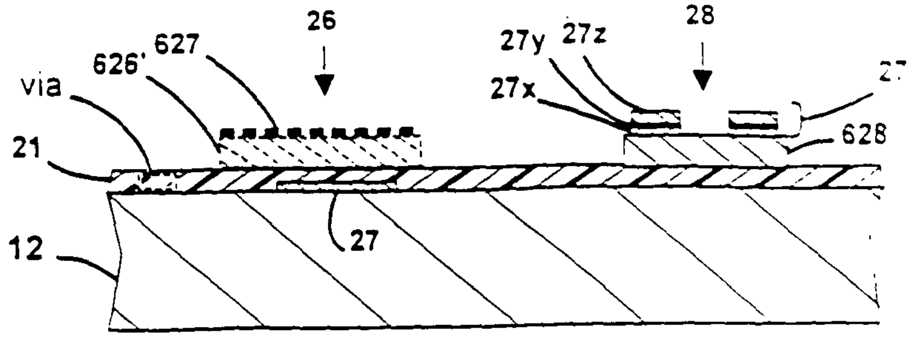


FIG._11

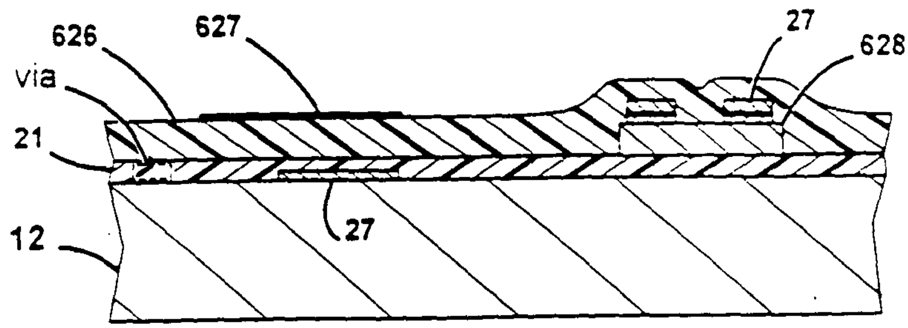


FIG._12

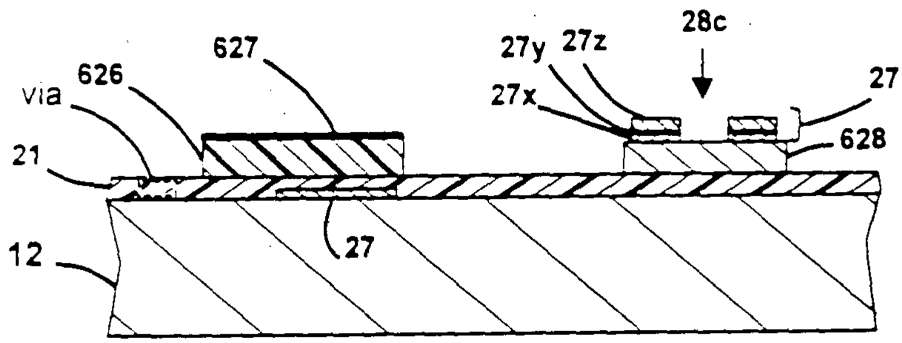


FIG._13

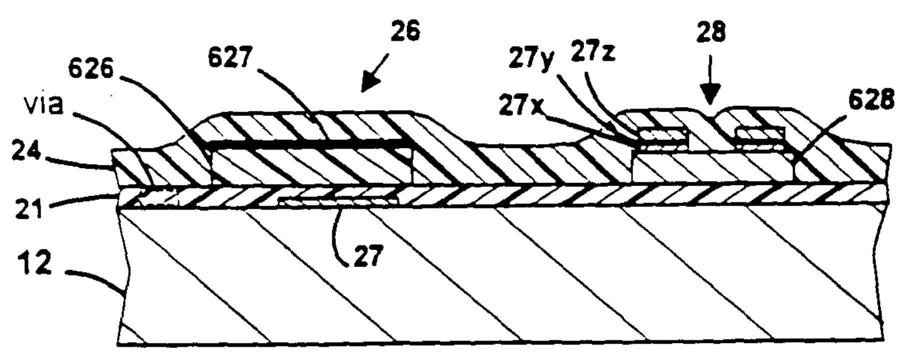


FIG._14

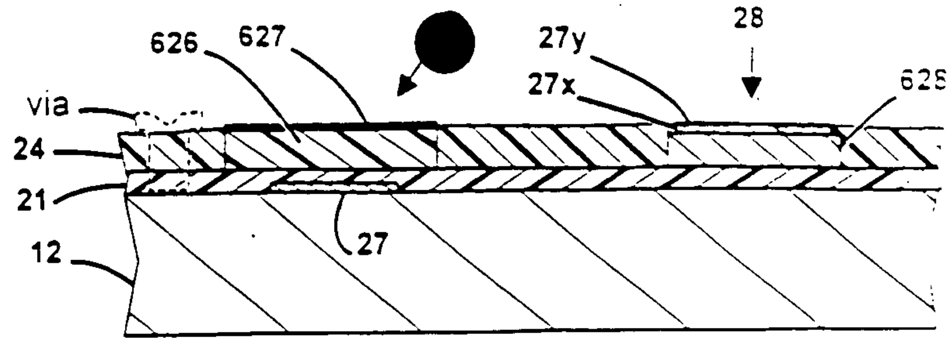


FIG._15

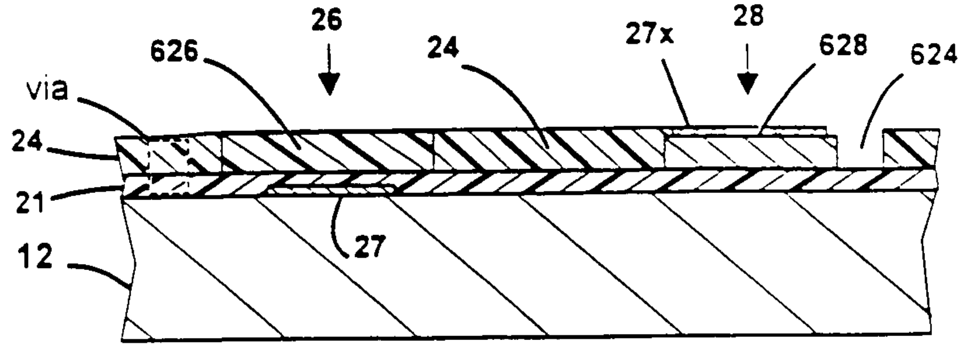


FIG._16

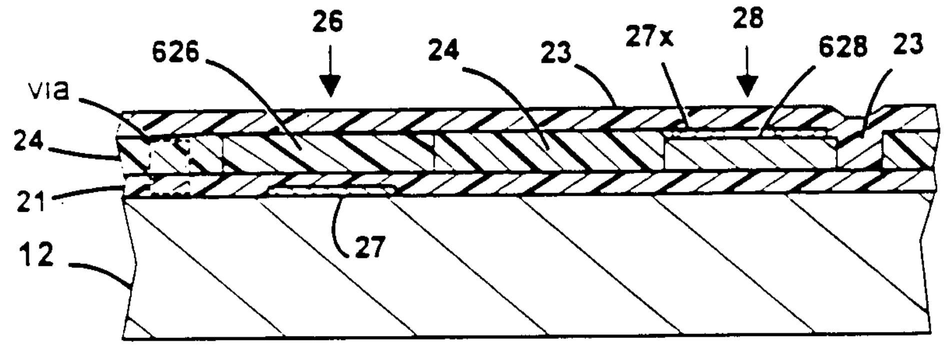


FIG._17

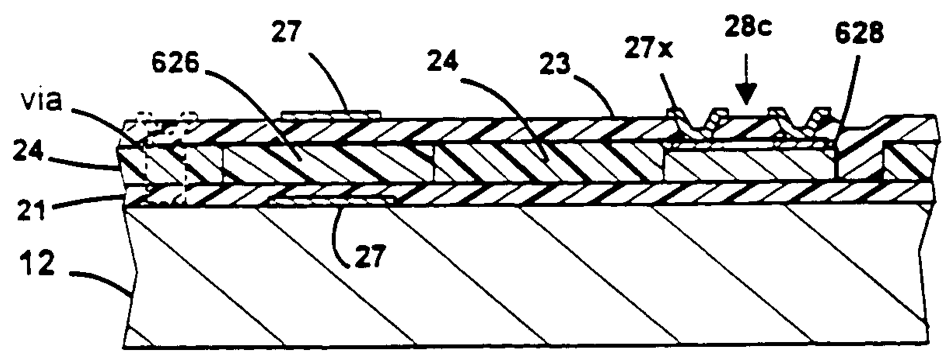


FIG._18

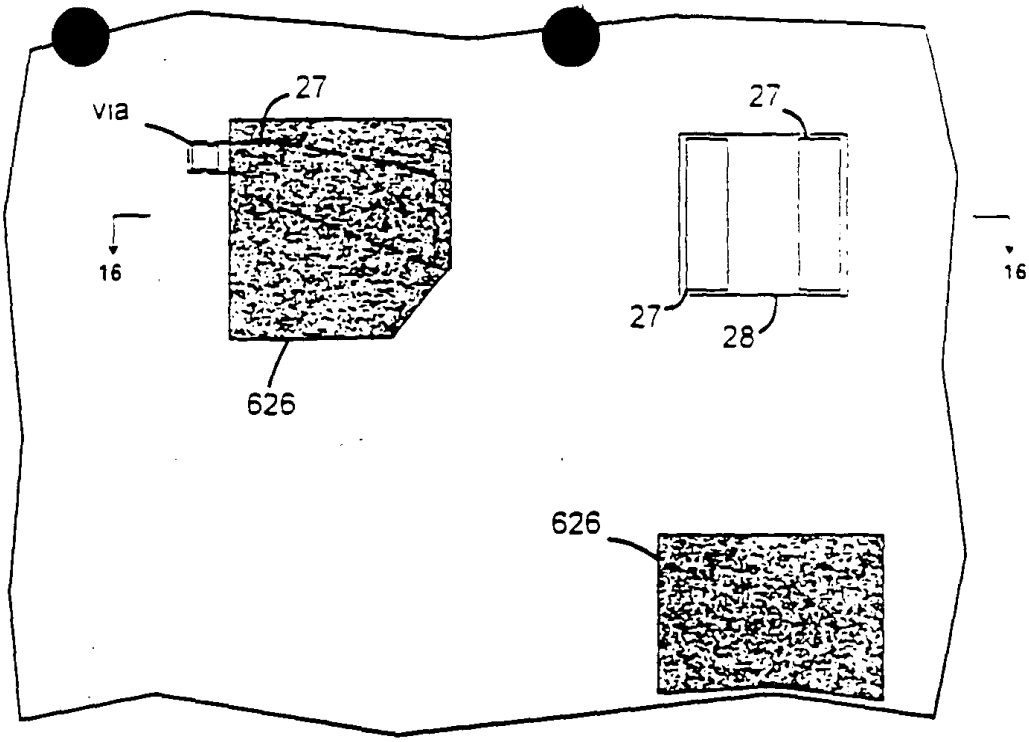


FIG._19

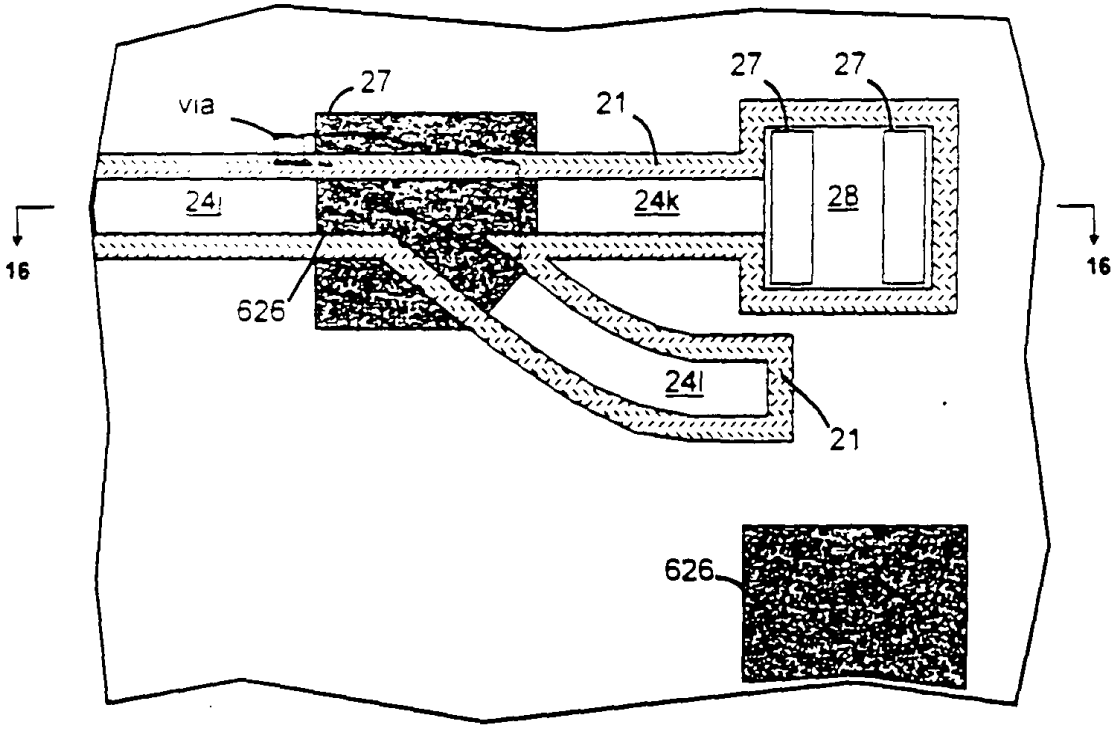
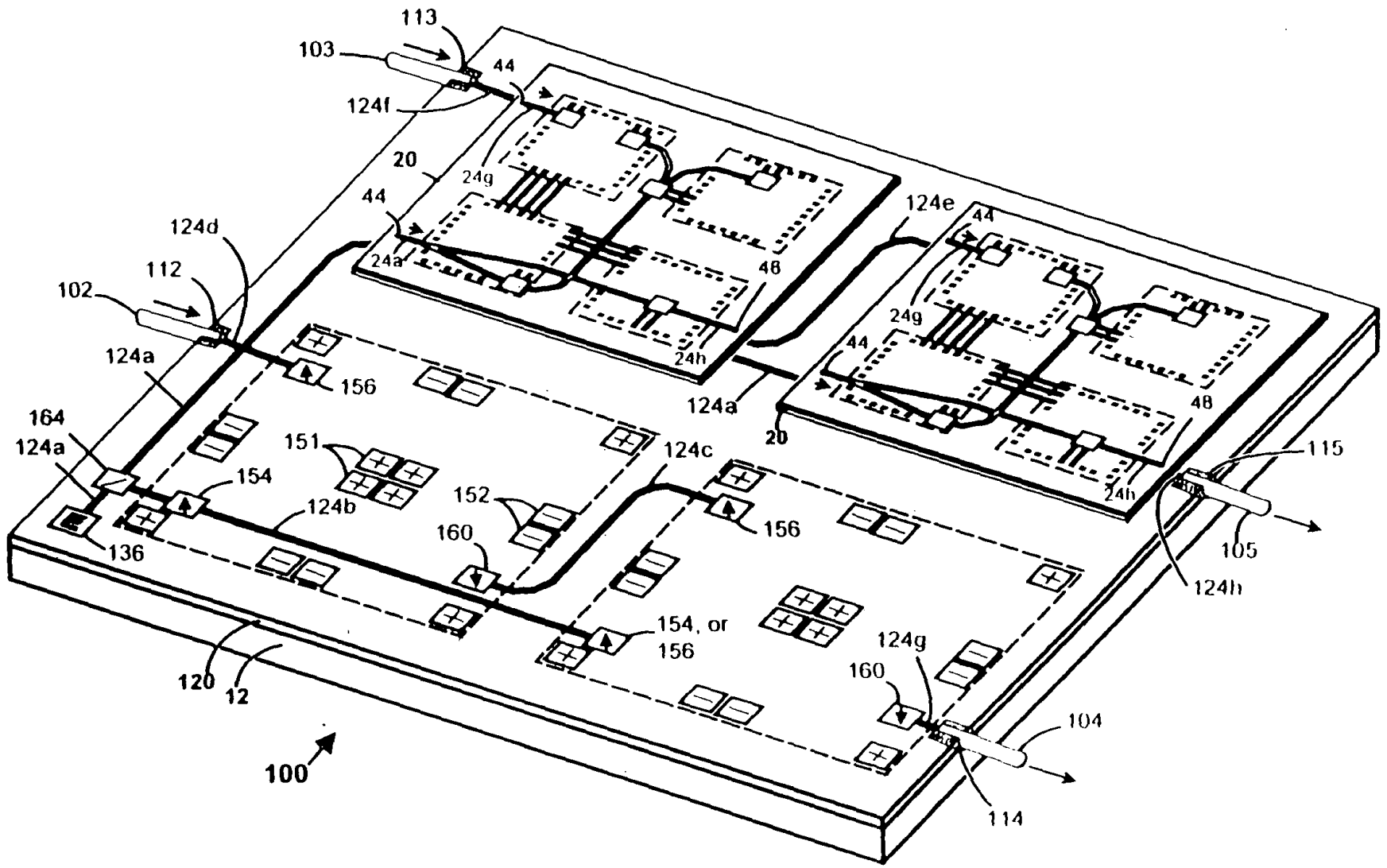


FIG._20


113
103
44
124f
20
24g
44
124d
112
102
24a
48
124e
44
24g
44
48
124a
156
164
124a
151
124c
154
152
124b
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156
136
115
105
124h
154, or
156
124g
160
120
12
104
100
114

FIG. 21

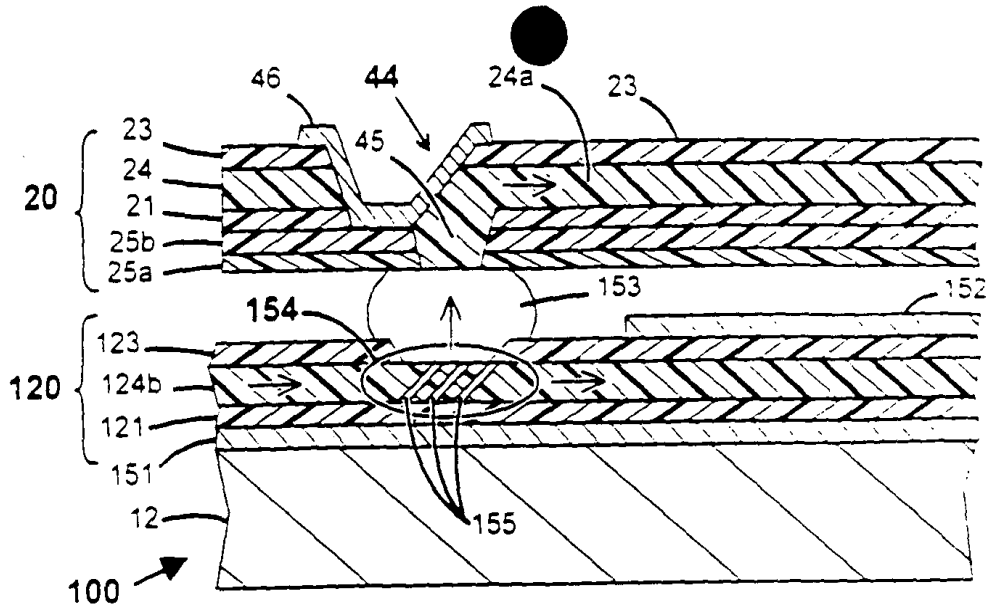


FIG._22

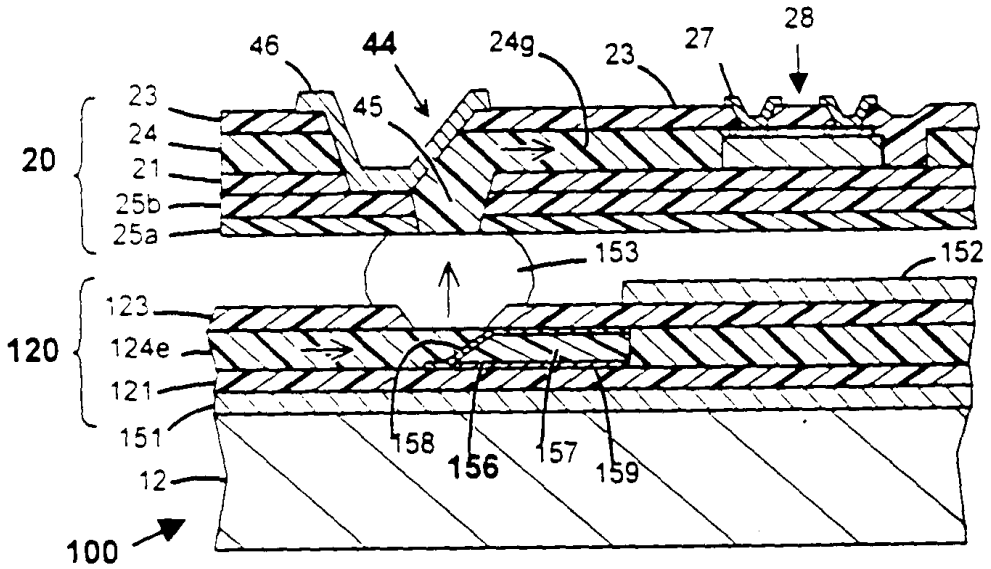


FIG._23

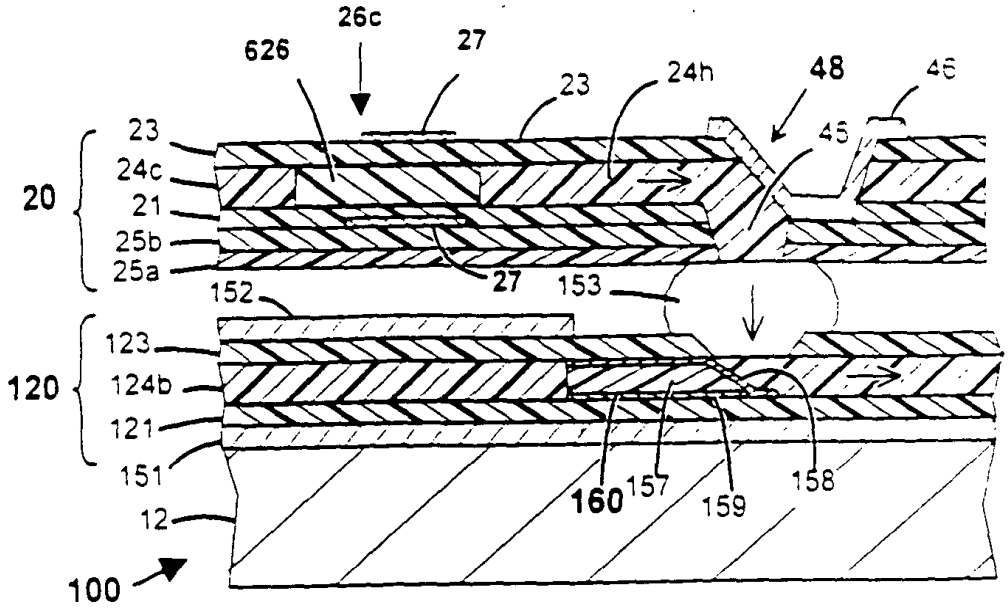


FIG._24

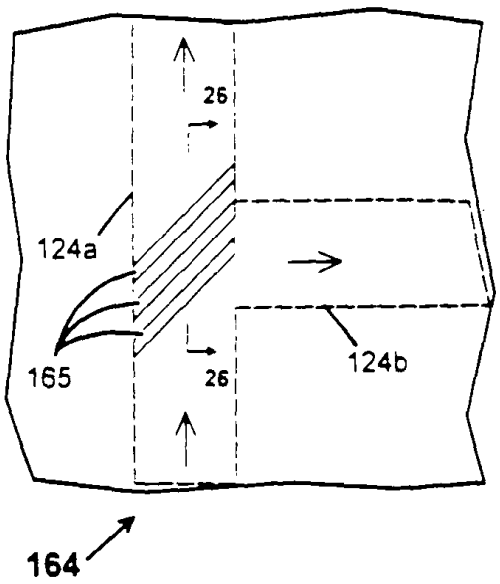


FIG._25

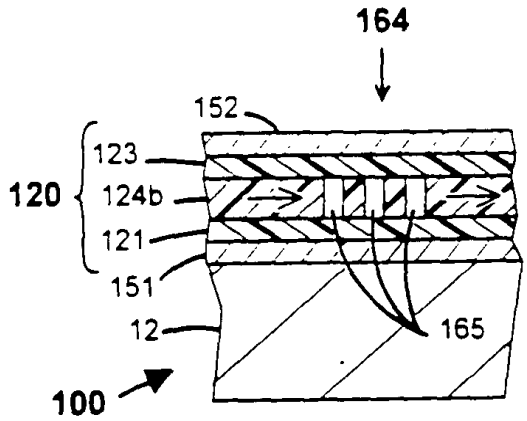


FIG._26

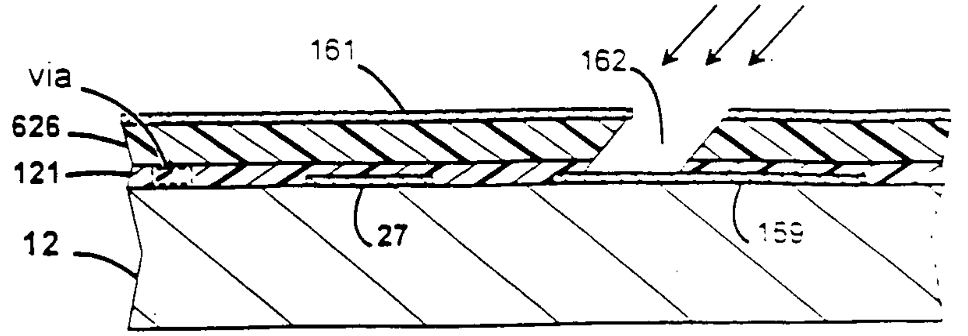


FIG._27

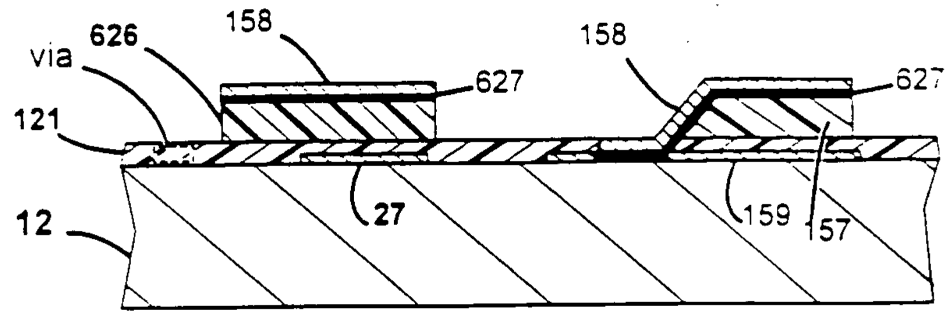


FIG._28

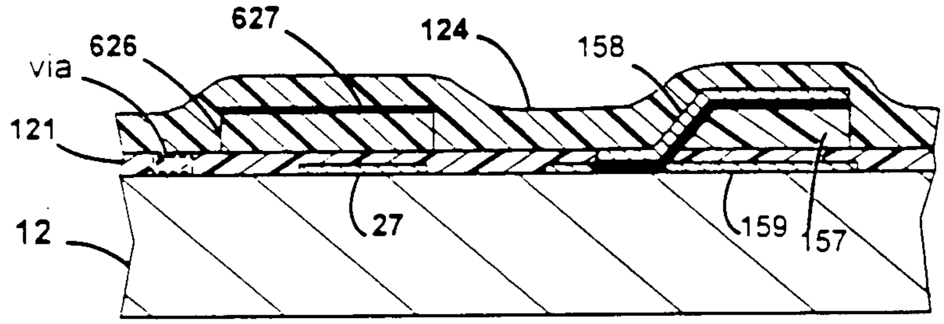


FIG._29

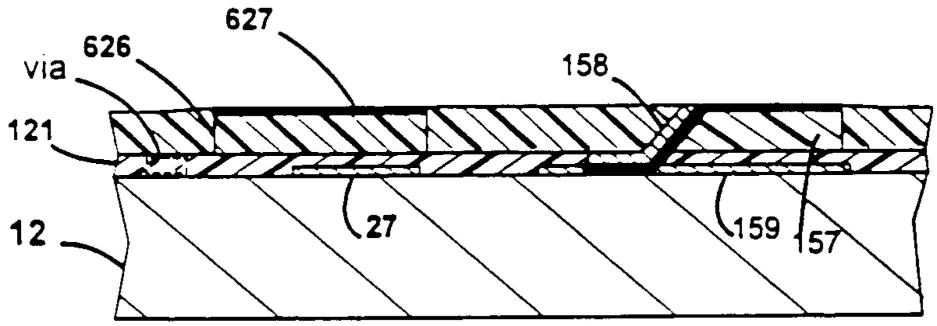


FIG._30

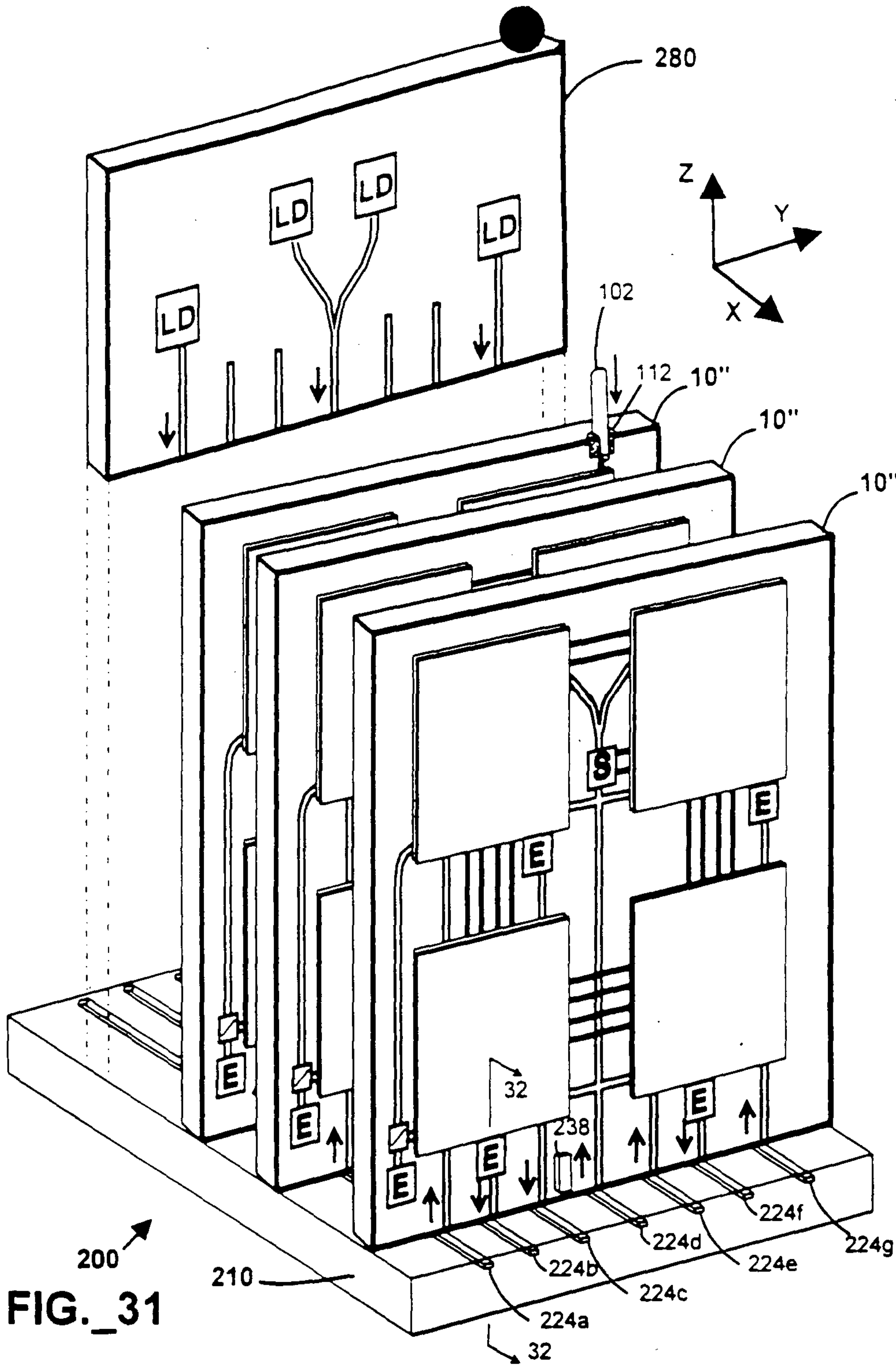
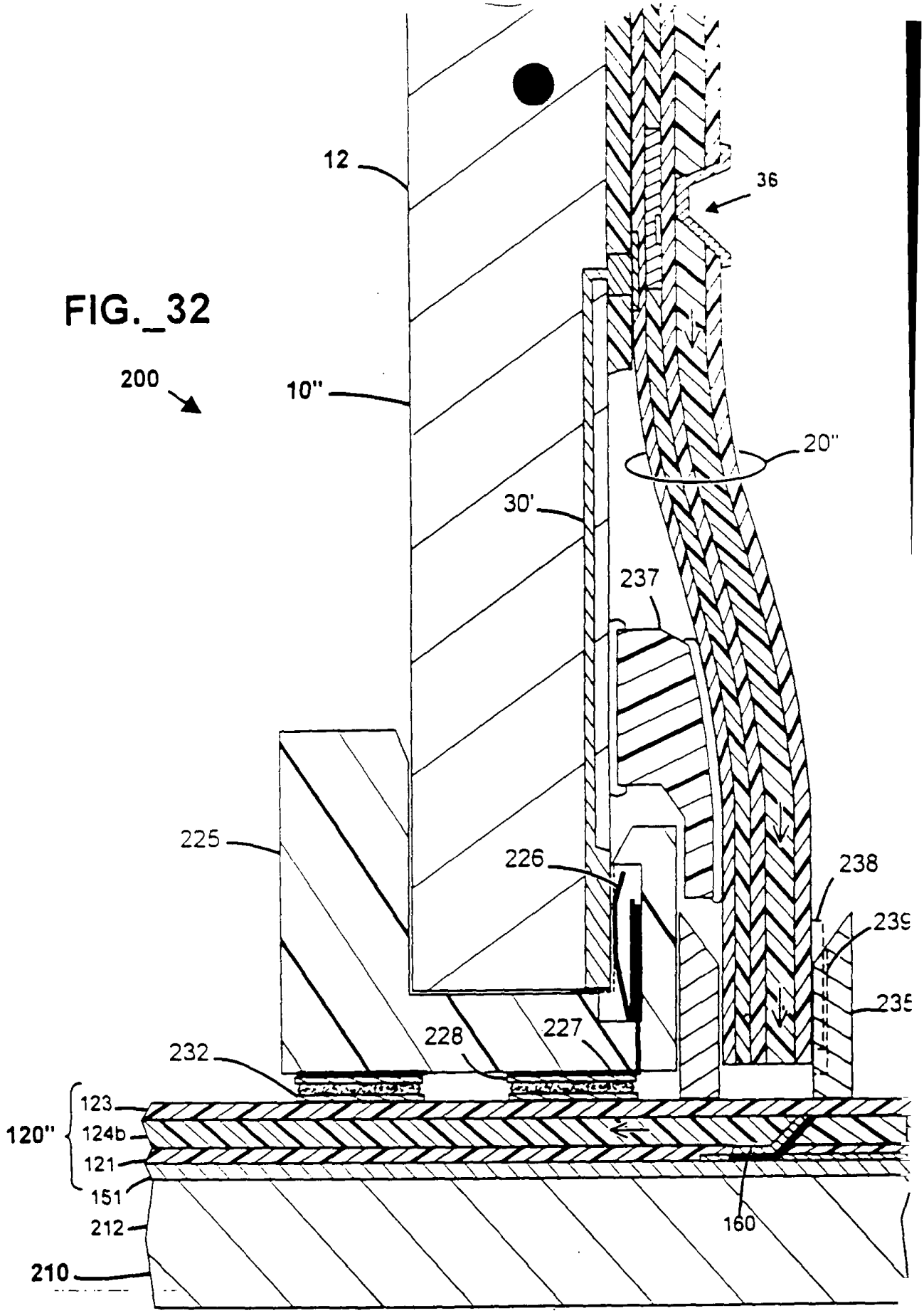


FIG._31

FIG._32


200
12
36
10"
20"
30'
237
225
226
238
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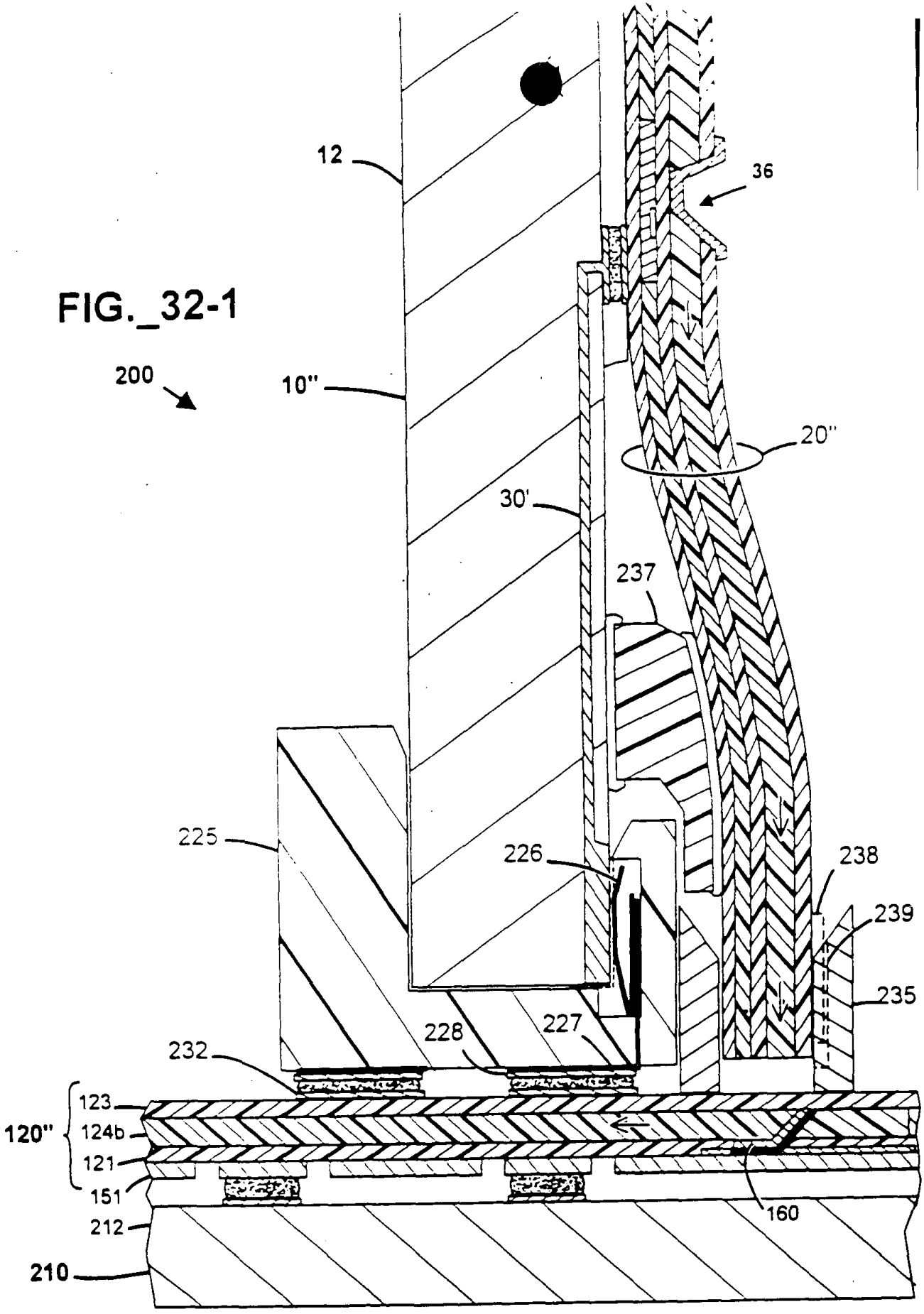
235
228
227
232
123
120"
124b
121
151
212
210
160

FIG._32-1


200
12
36
10"
20"
30'
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120"
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124b
121
151
212
210
160

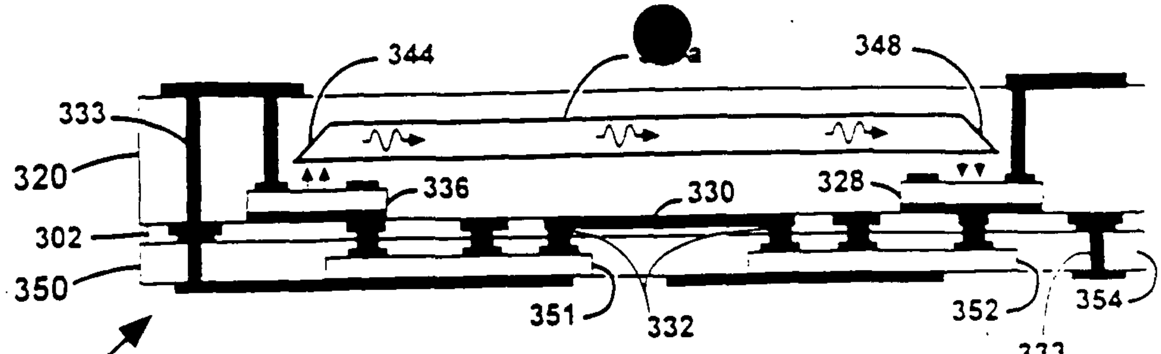


FIG._33

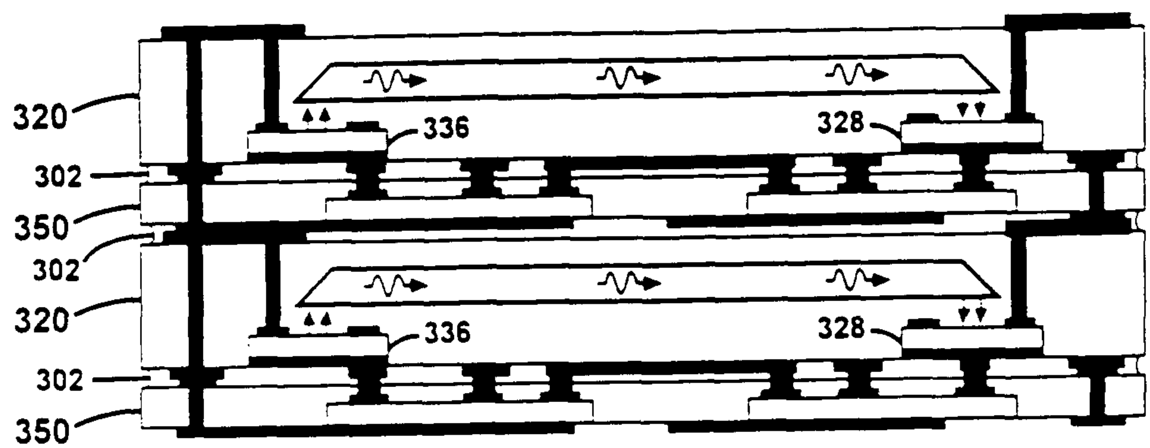


FIG._34

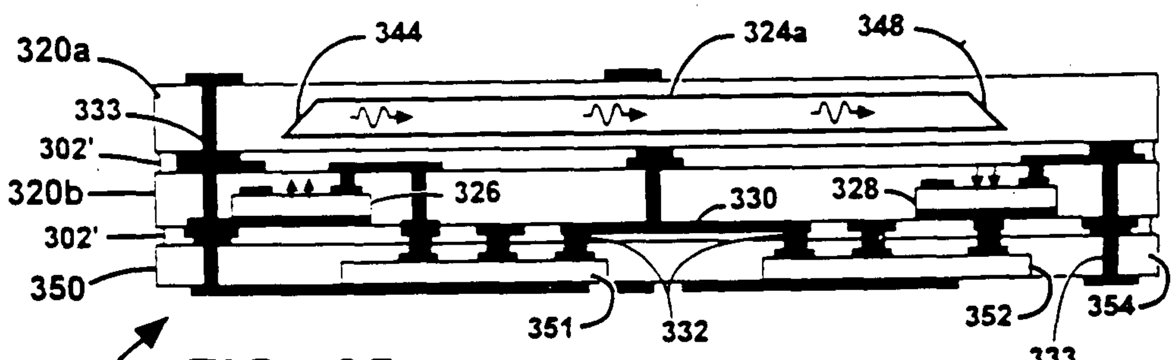


FIG._35

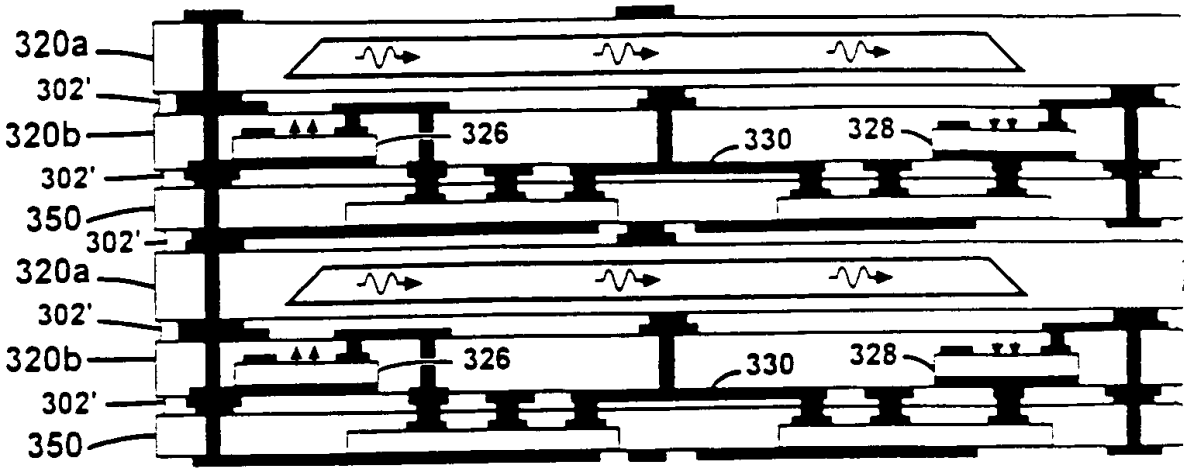


FIG._36

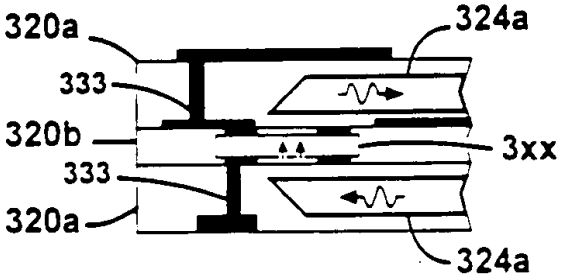


FIG._37-1

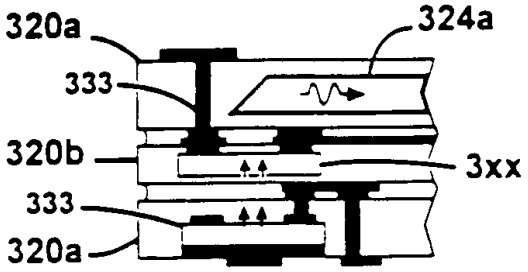


FIG._37-2

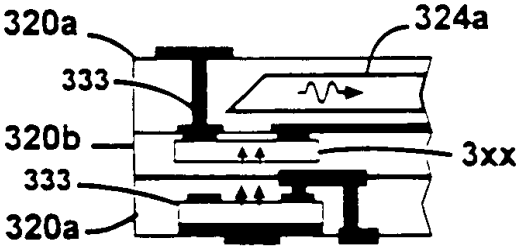


FIG._37-3

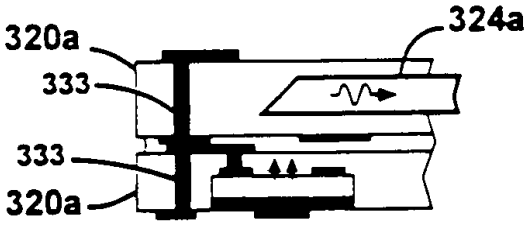


FIG._37-4

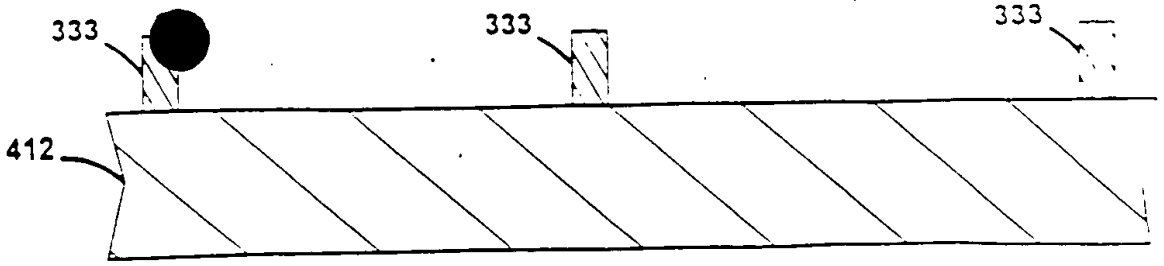


FIG._38

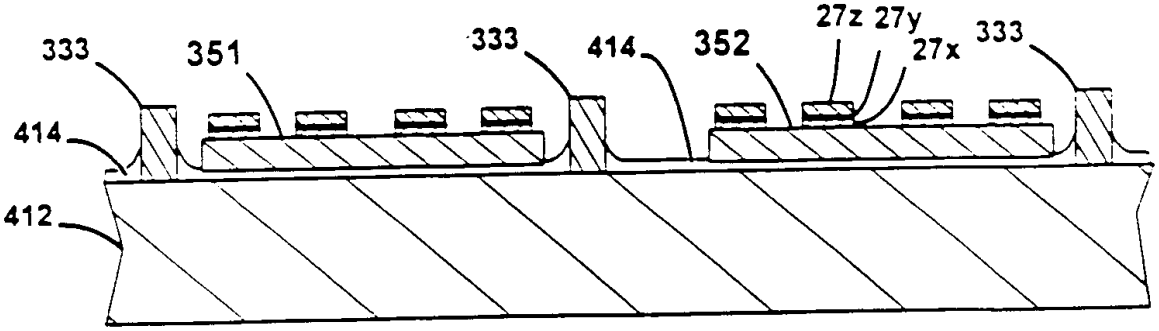


FIG._39

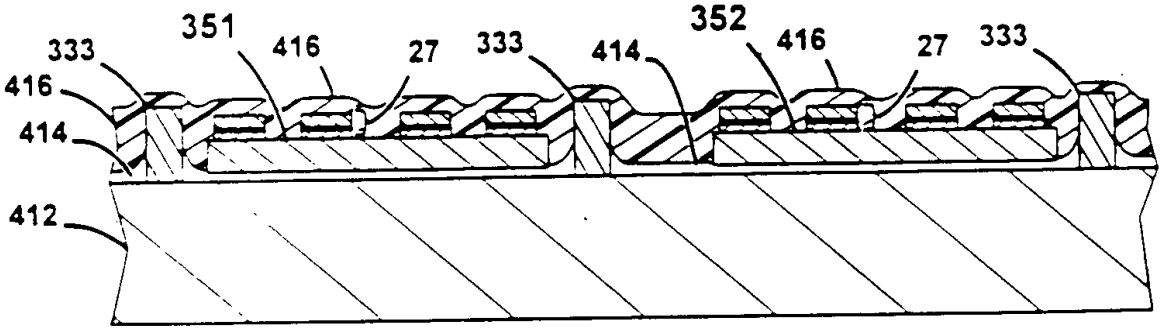


FIG._40

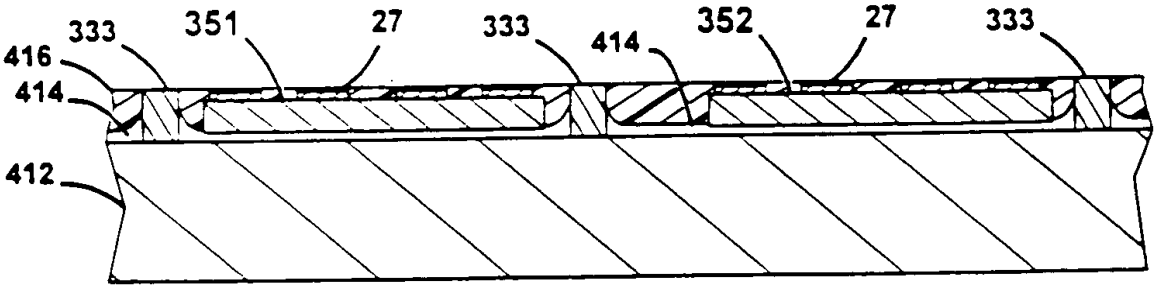


FIG._41

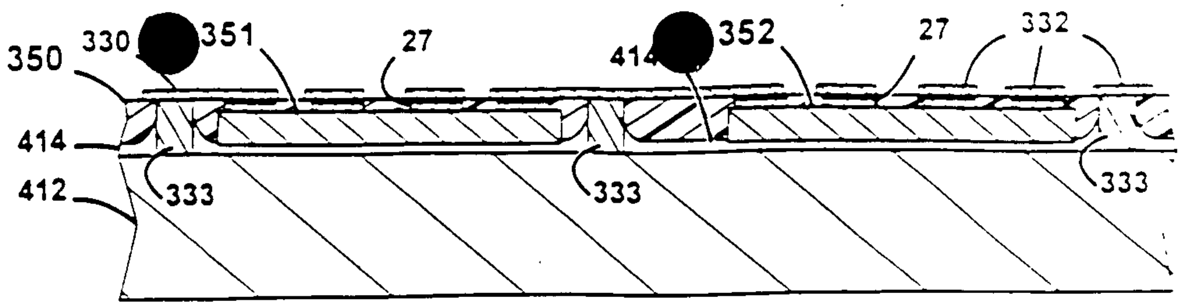


FIG._42

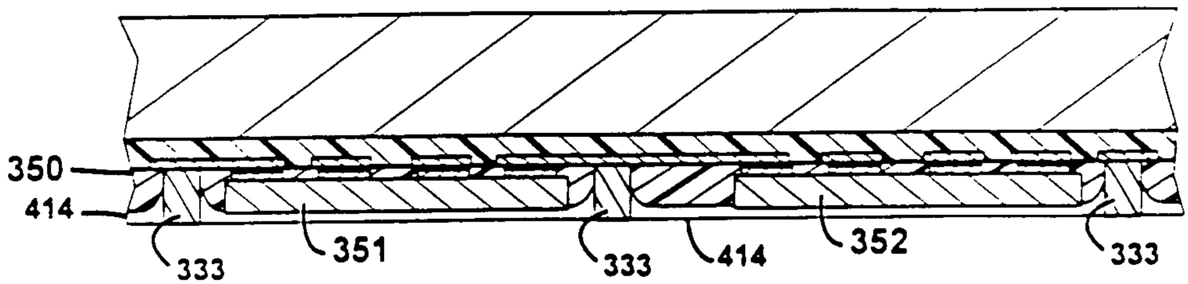


FIG._43

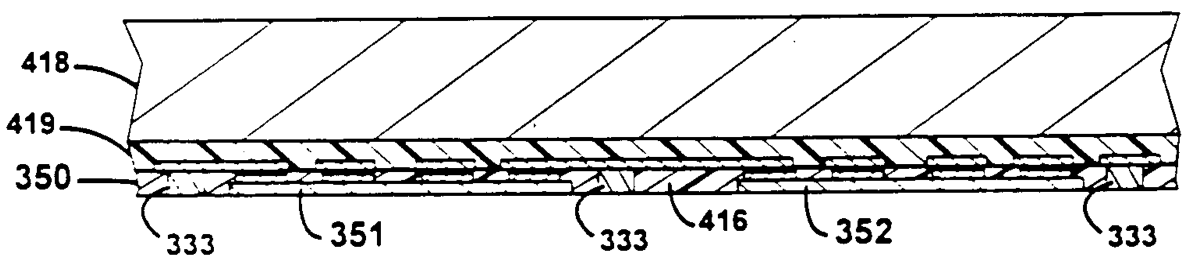


FIG._44

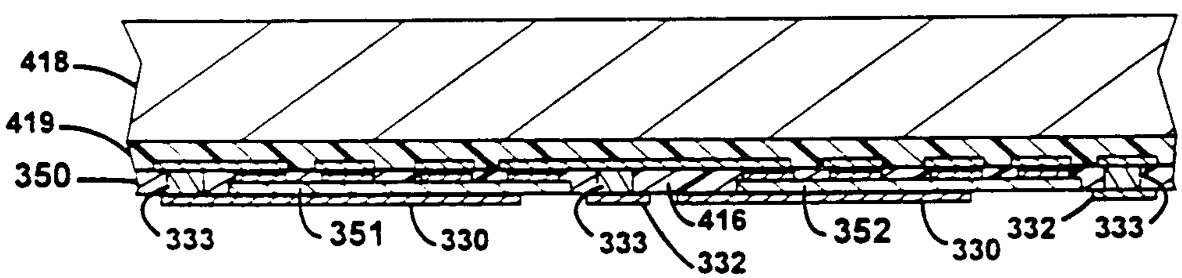


FIG._45

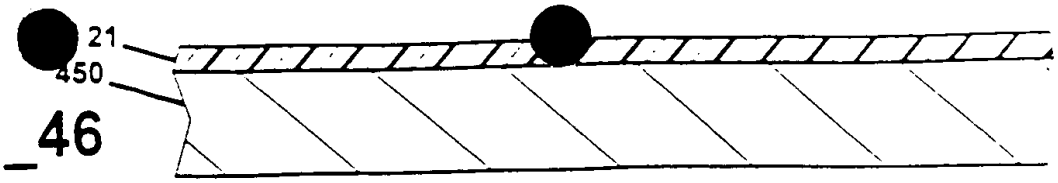


FIG._46

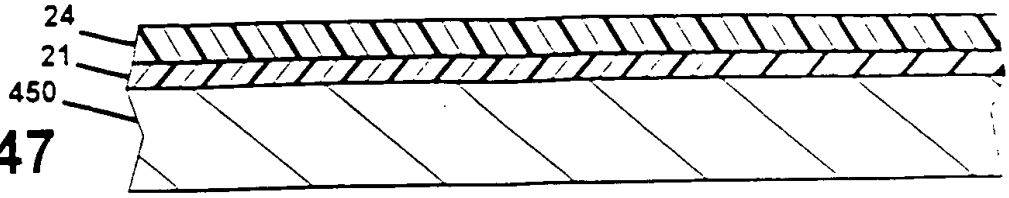


FIG._47

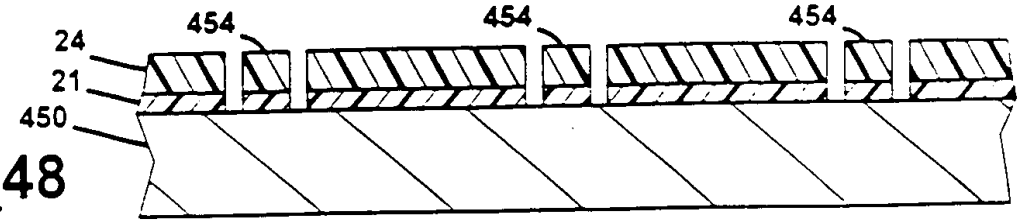


FIG._48

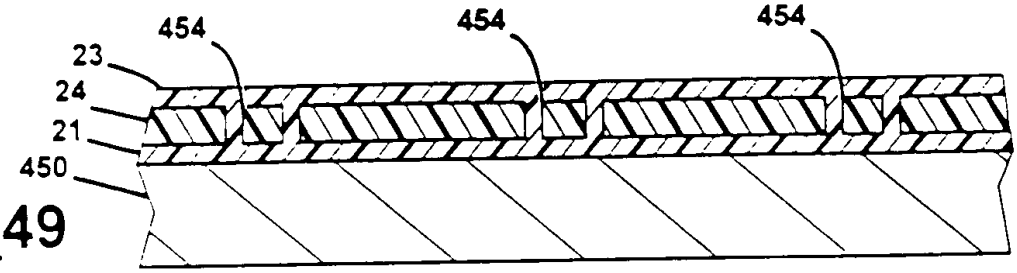


FIG._49

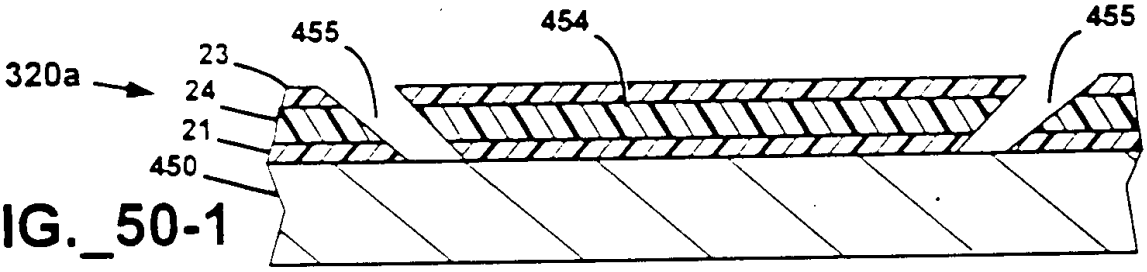


FIG._50-1

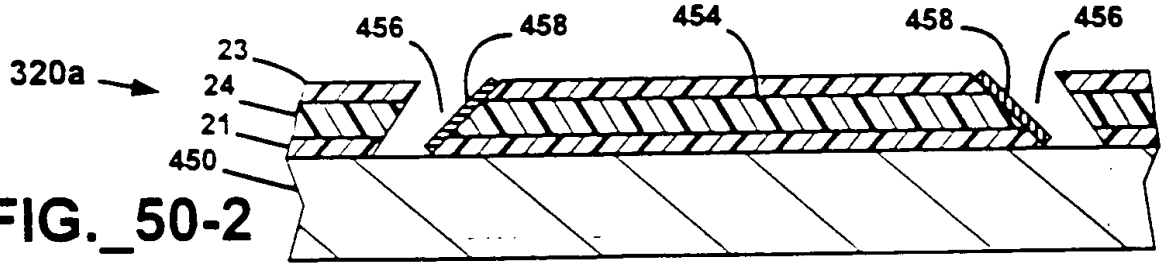


FIG._50-2

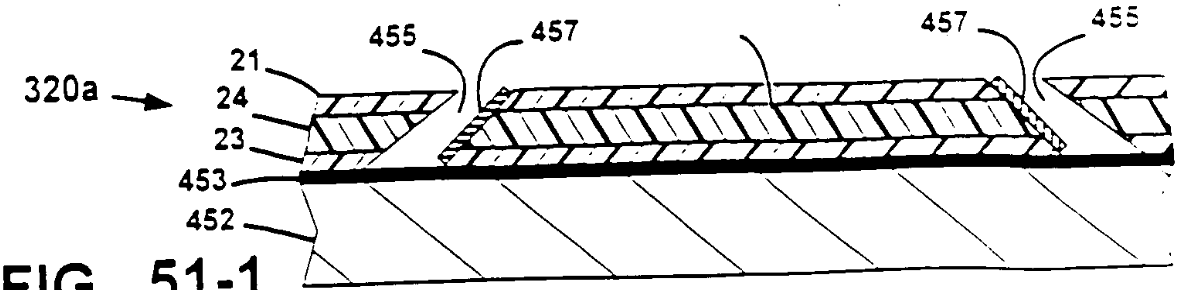


FIG._51-1

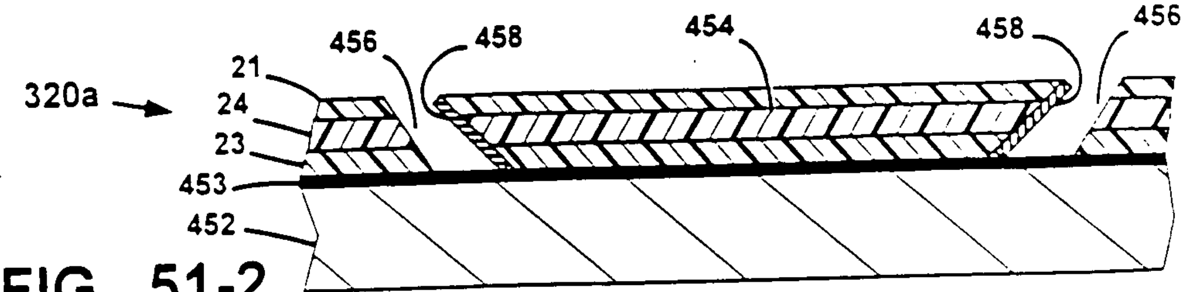


FIG._51-2

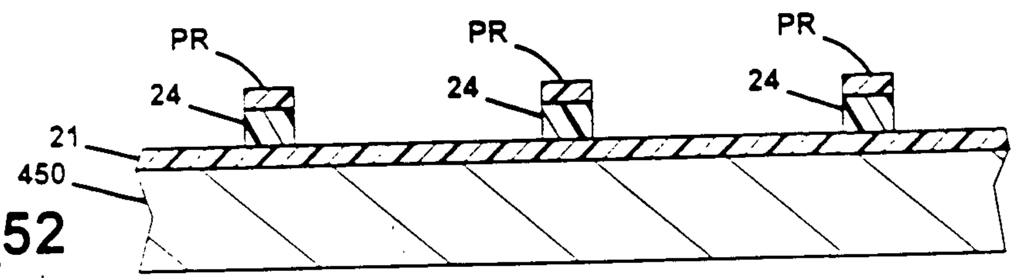


FIG._52

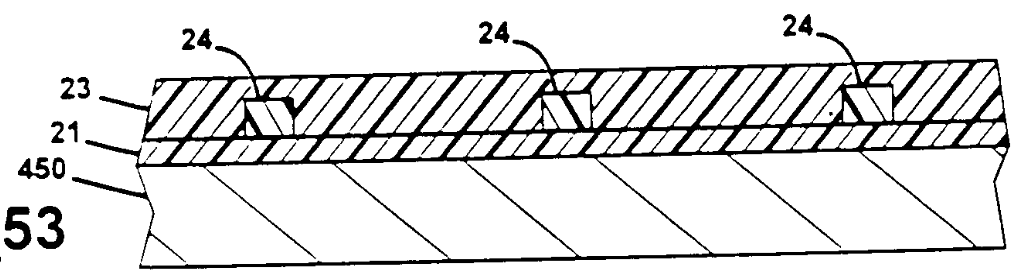


FIG._53

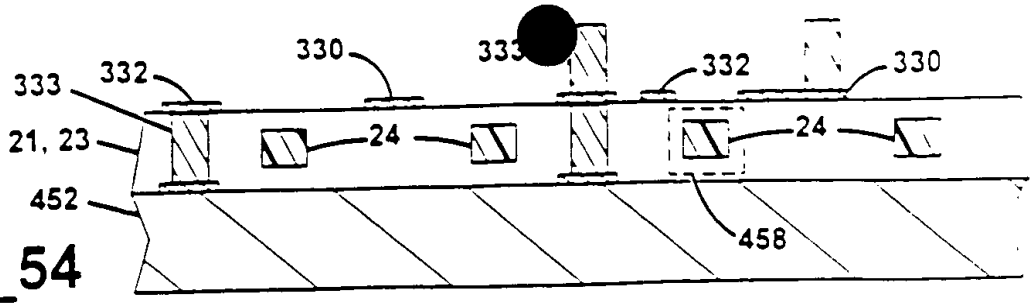


FIG._54

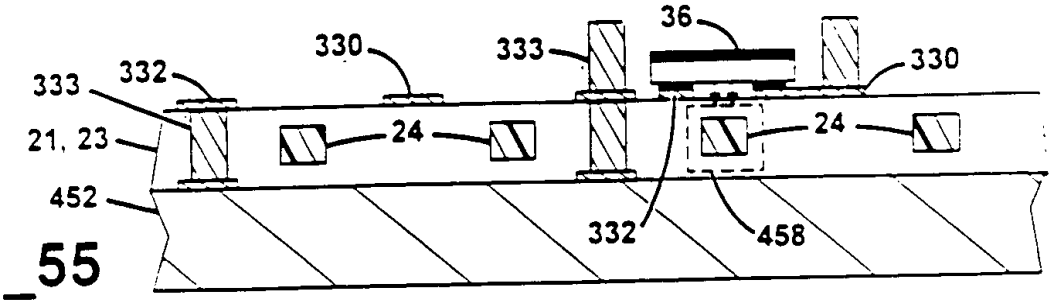


FIG._55

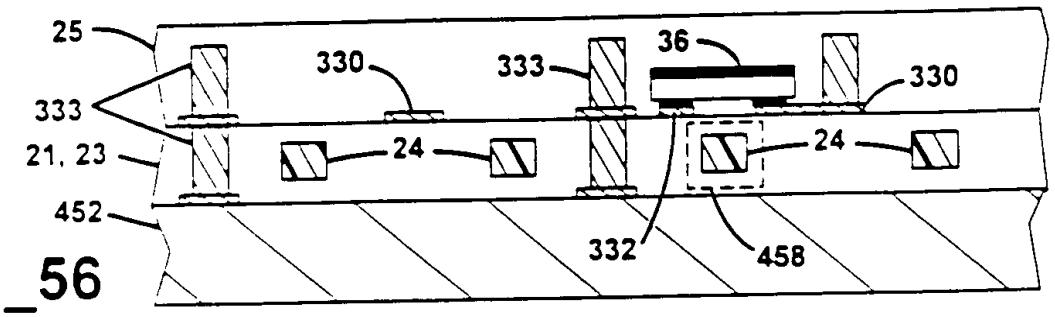


FIG._56

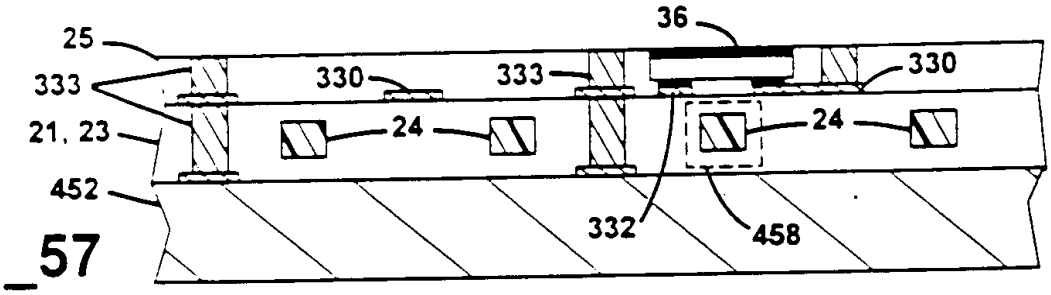


FIG._57

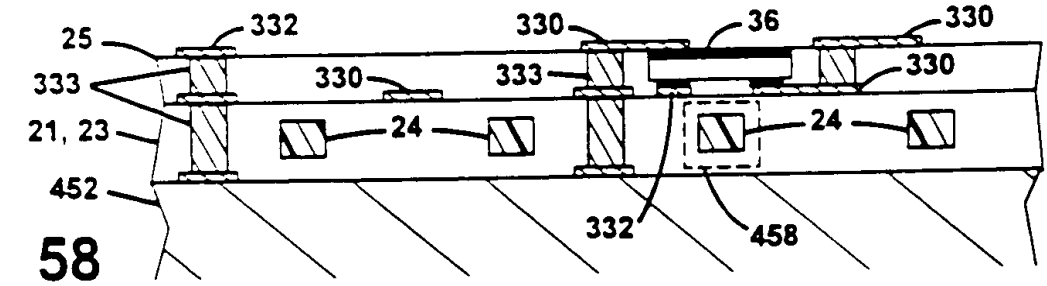


FIG. 58

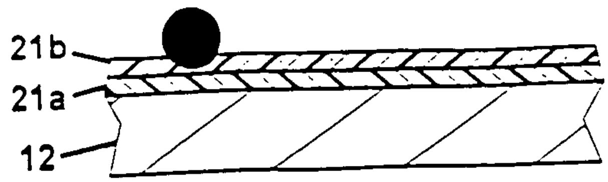


FIG._59

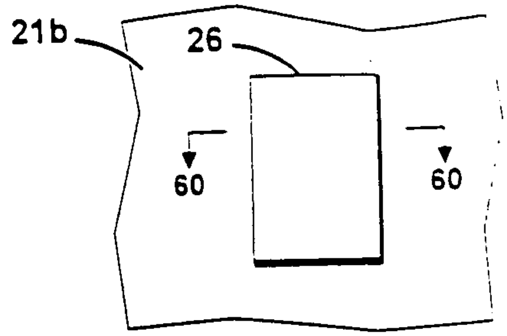


FIG._61

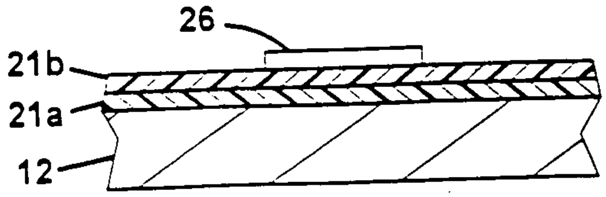


FIG._60

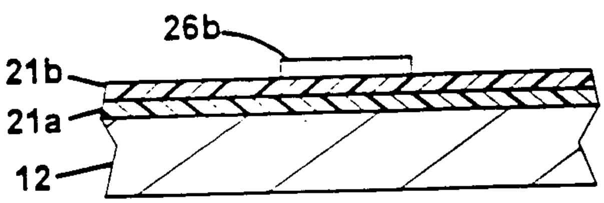


FIG._62

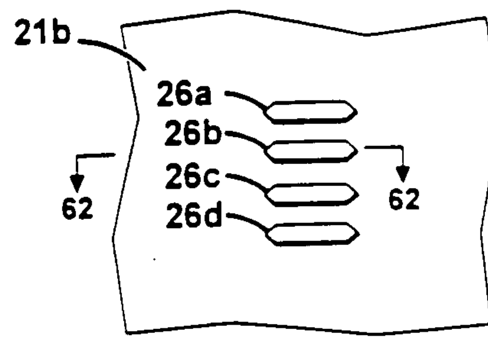


FIG._63

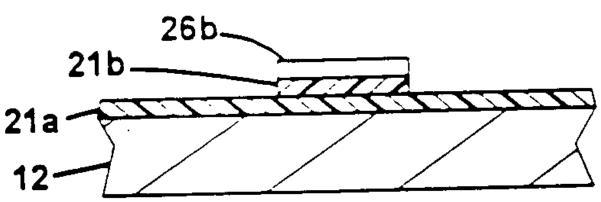


FIG._64

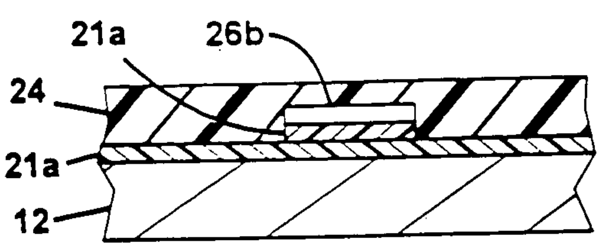


FIG._65

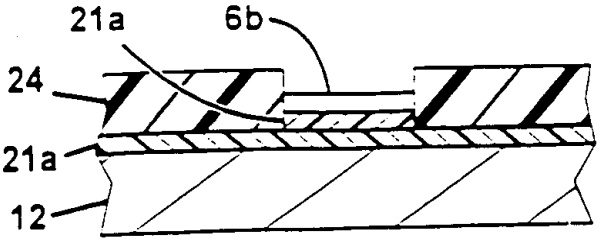


FIG._66

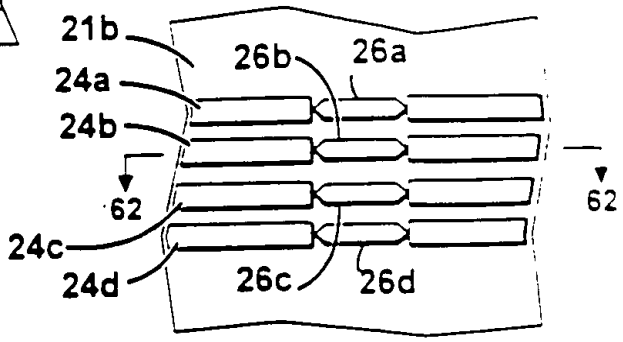


FIG._67

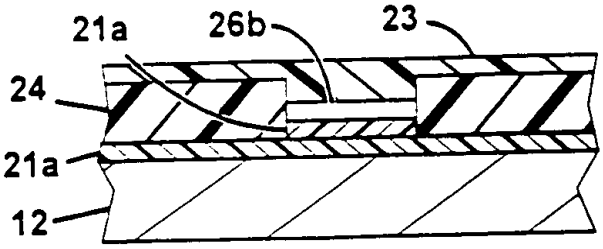


FIG._68

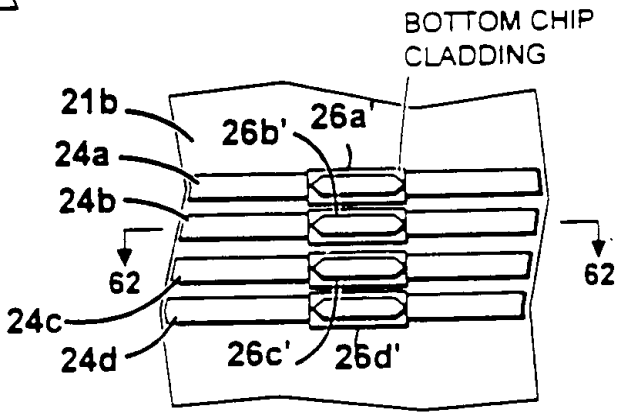


FIG._67-2

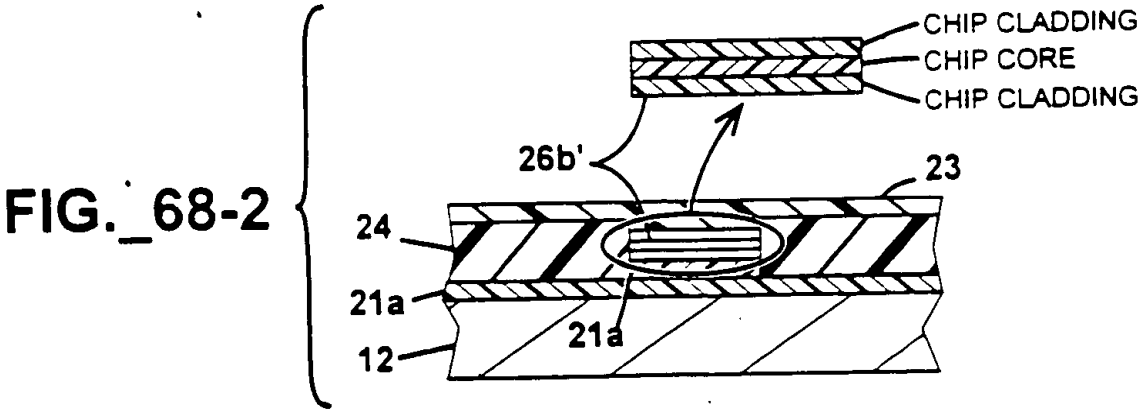


FIG._68-2

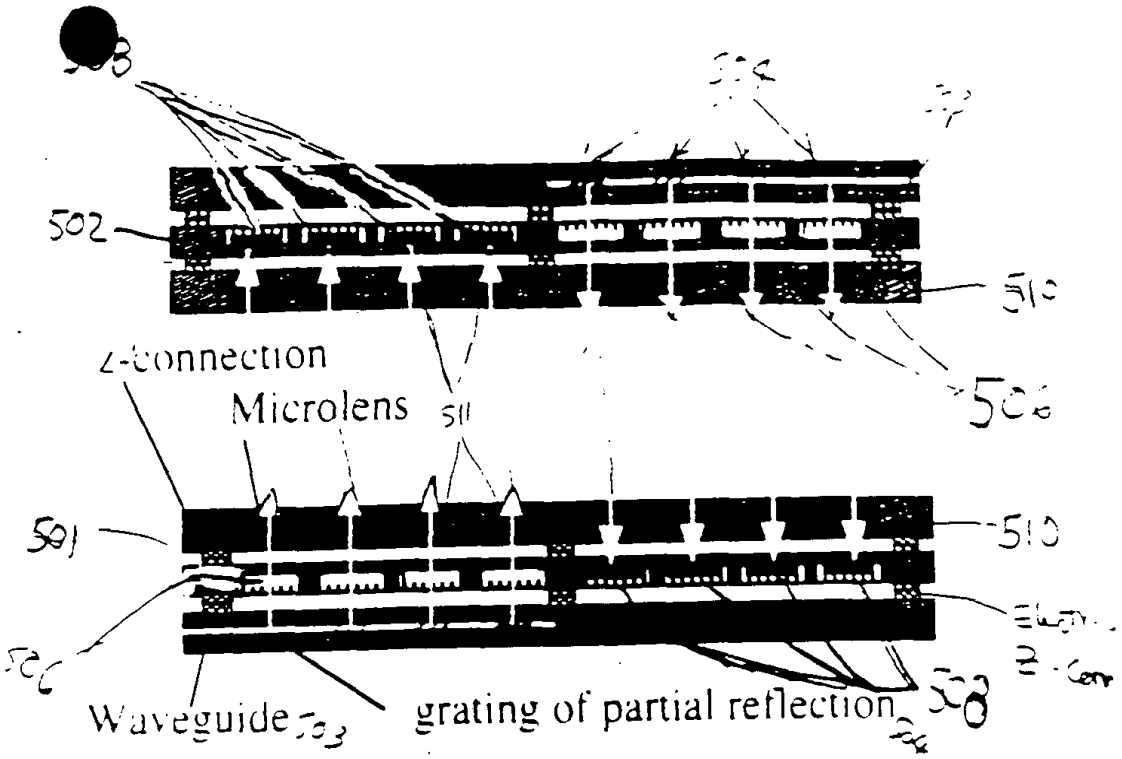


FIG. 69

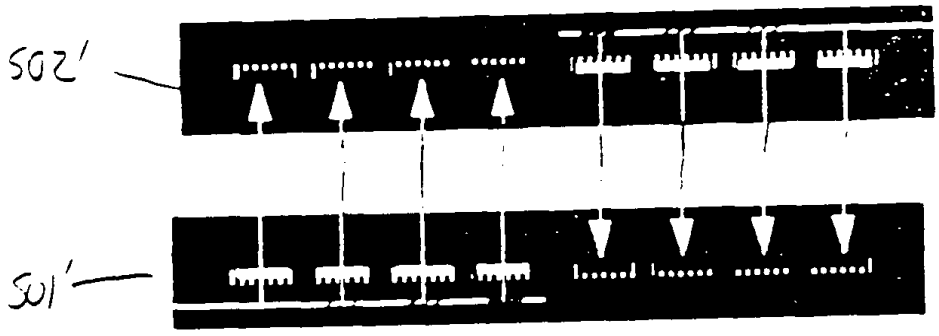


FIG. 70

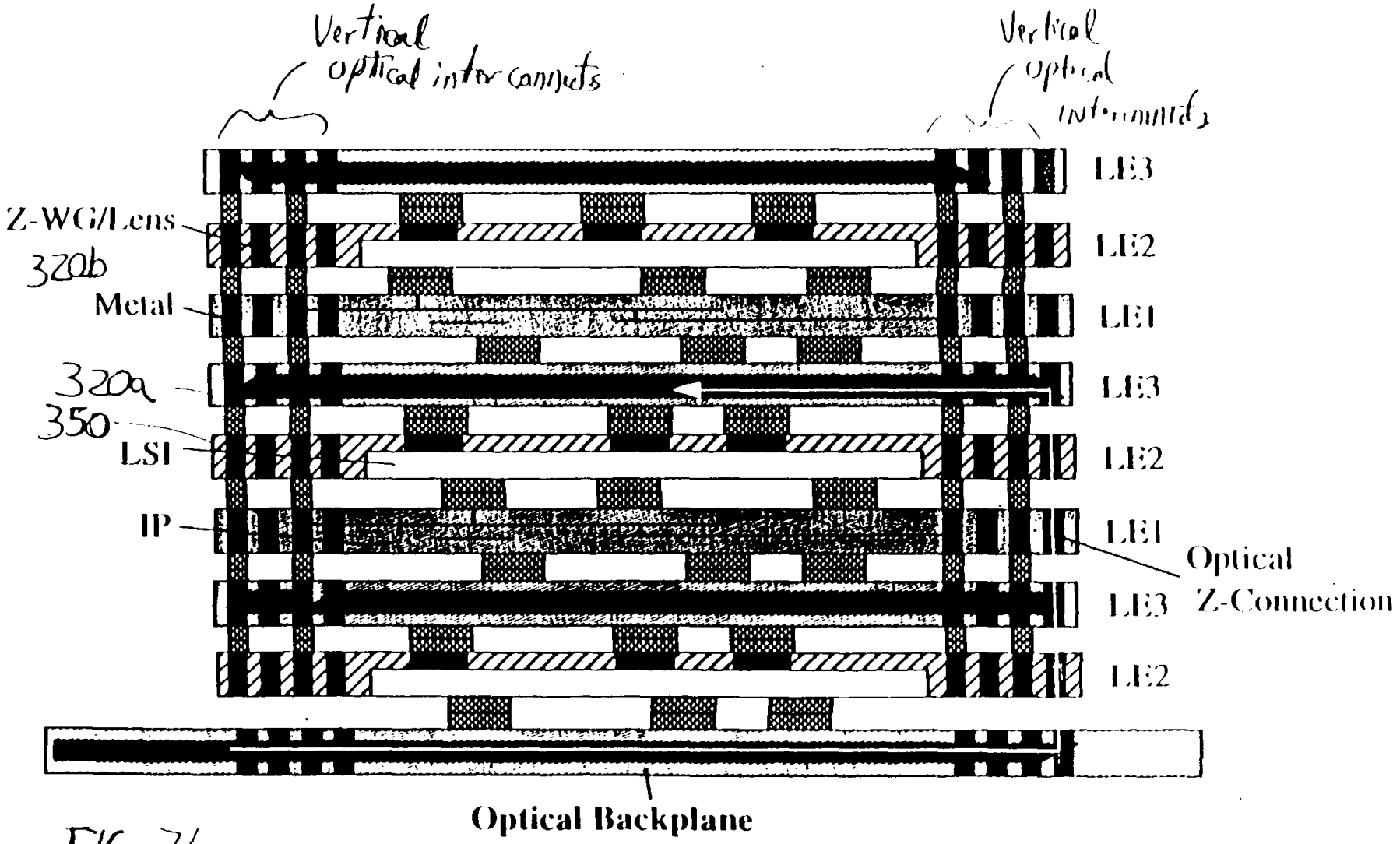

Vertical optical interconnects
Vertical optical interconnects
LE3
LE2
LE1
LE3
LE2
LE1
LE3
LE2
Z-WG/Lens
320b
Metal
320a
350
LSI
IP
Optical Z-Connection
Optical Backplane

FIG. 7

FIG 72

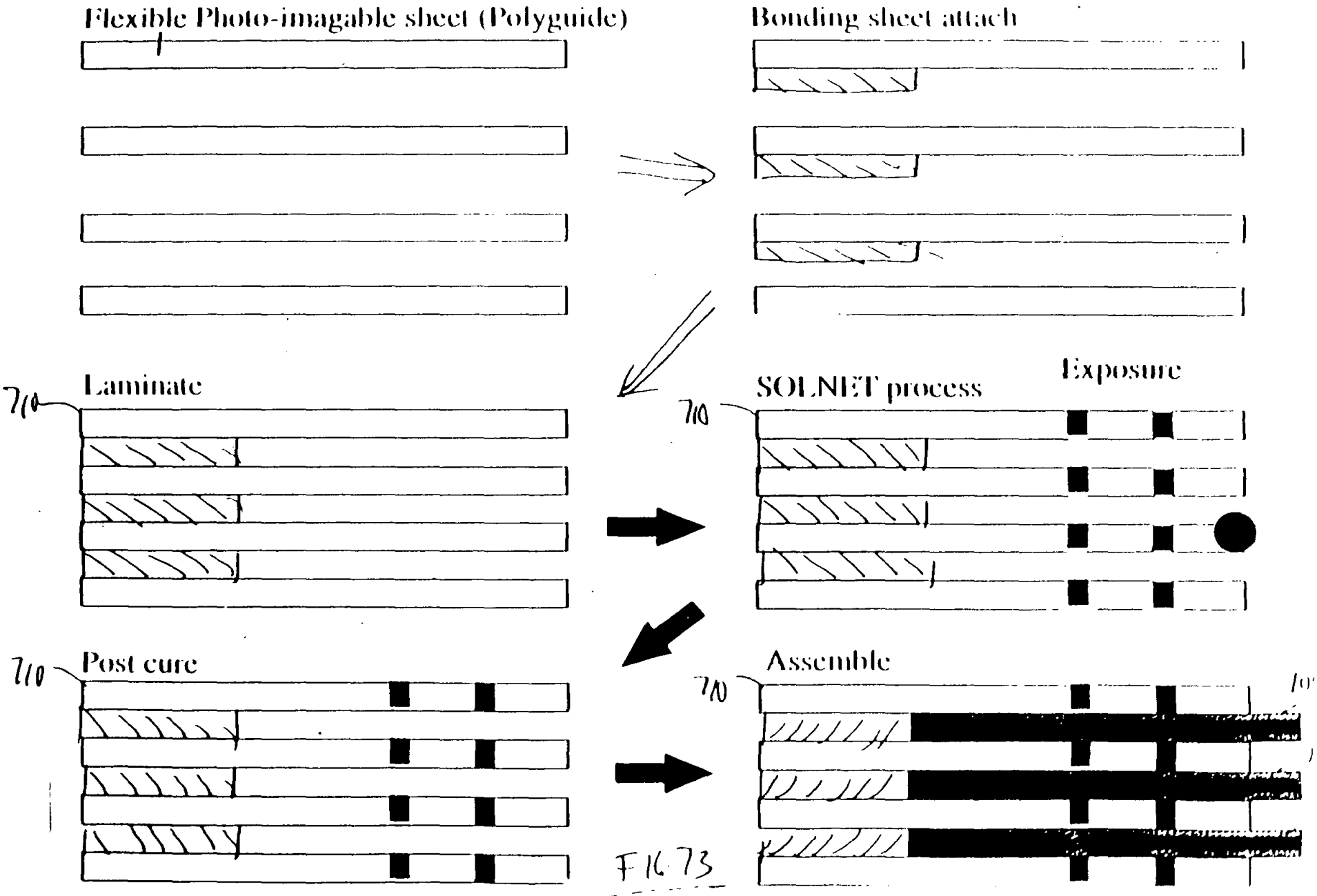


FIG 73

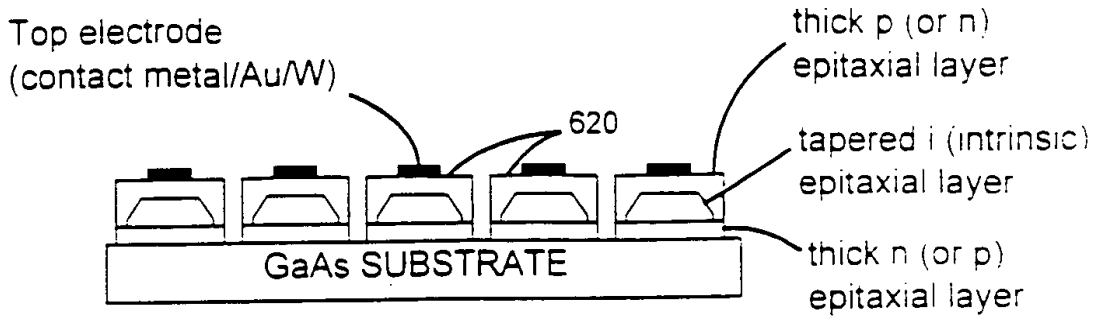


FIG._74 (Epitaxial growth and patterning)

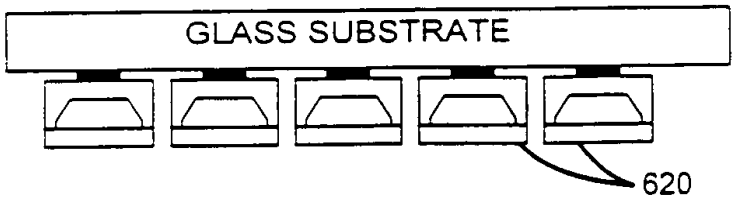


FIG._75 (Epitaxial liftoff)

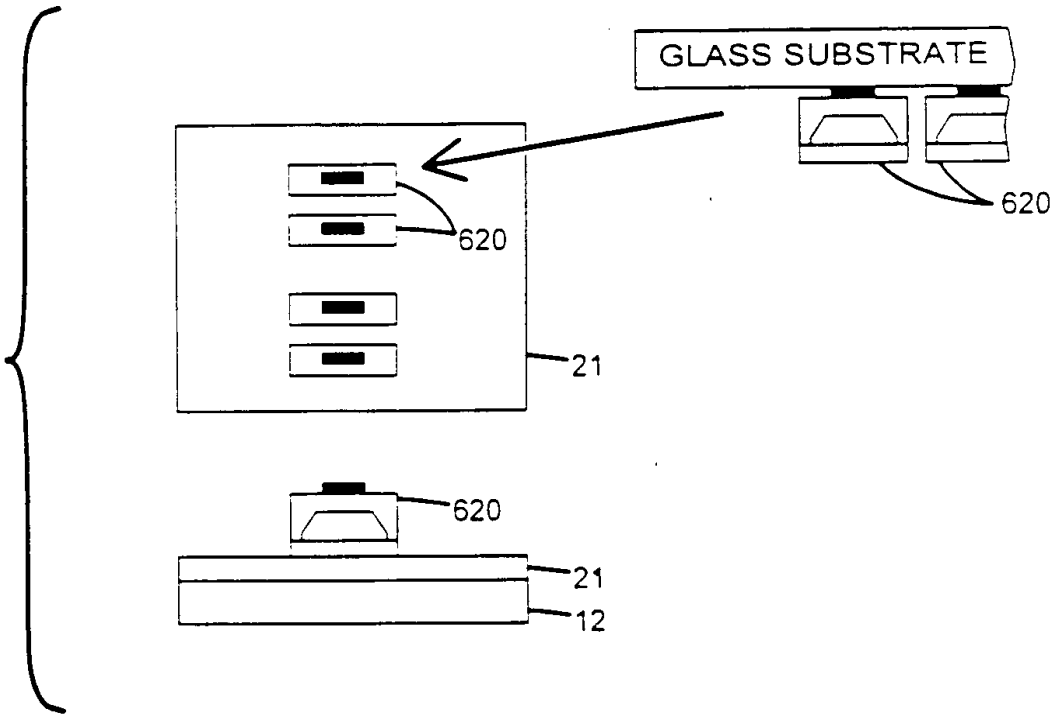
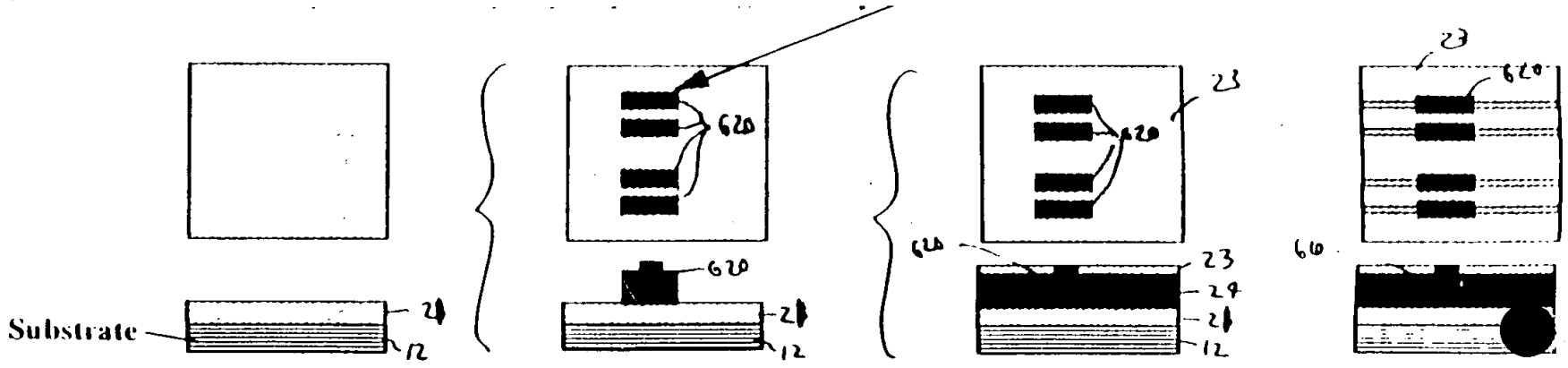
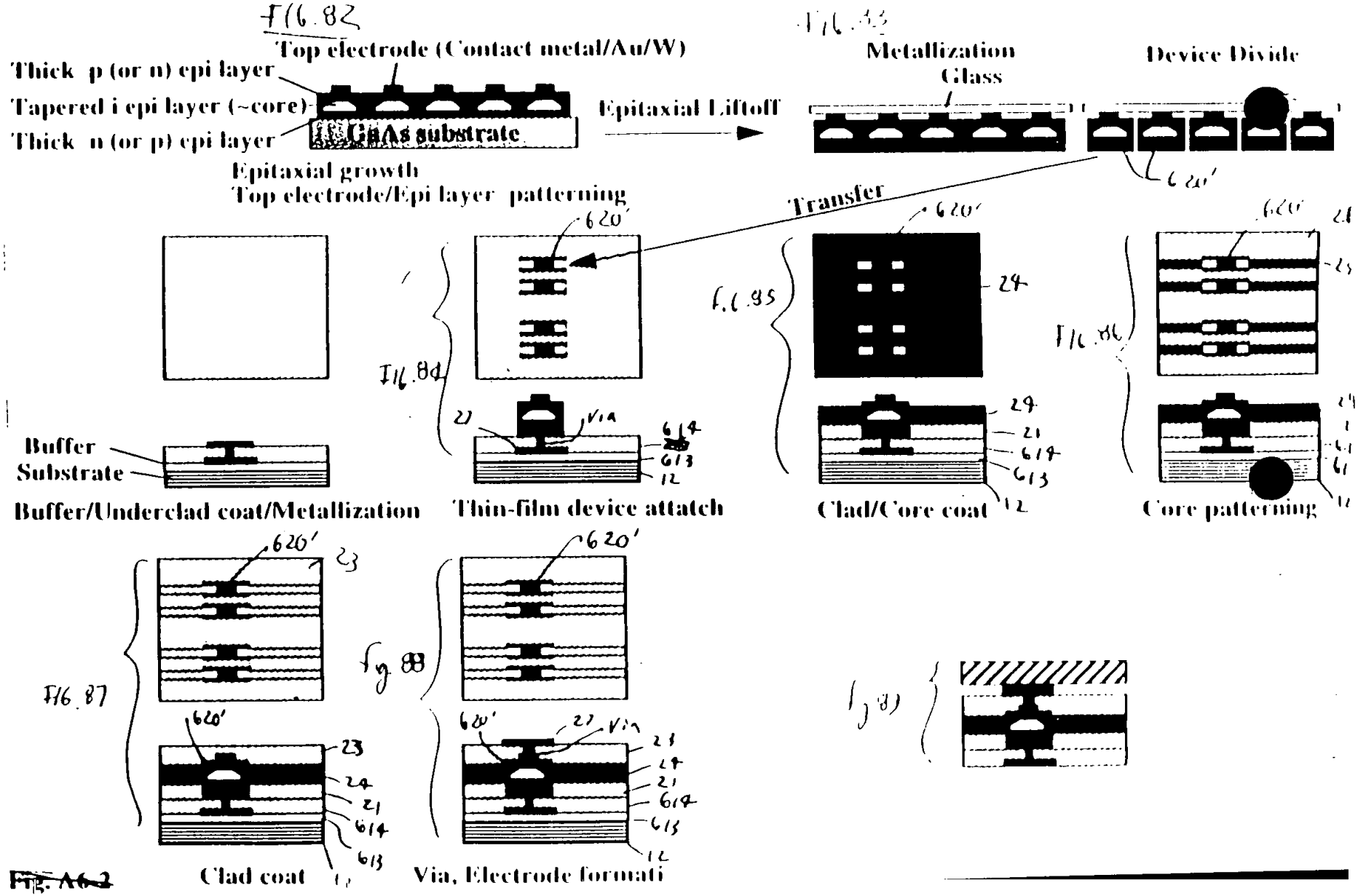


FIG._76 (Transfer)



F16. 76 F16. 77 F16. 78

F16. 81



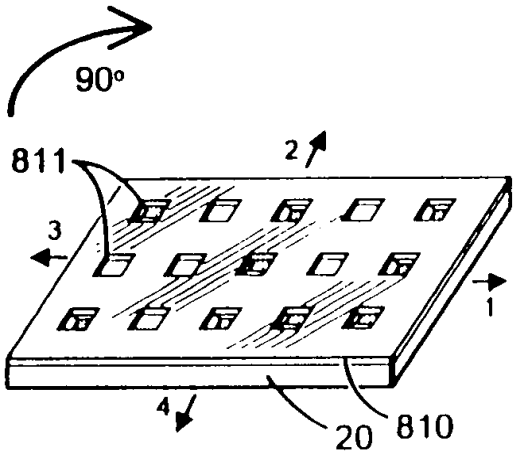


FIG._96

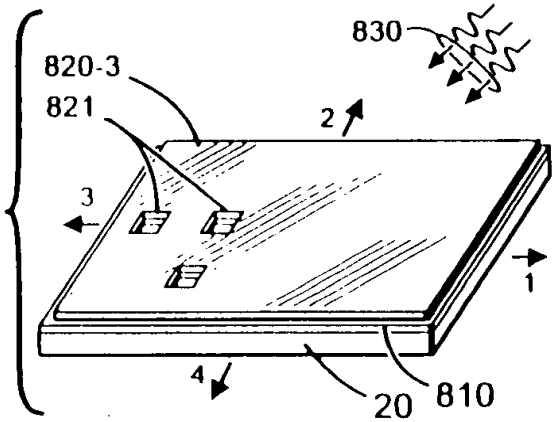


FIG._97

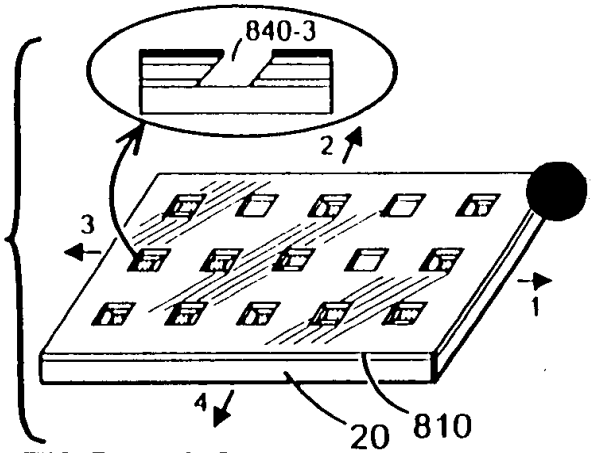


FIG._98

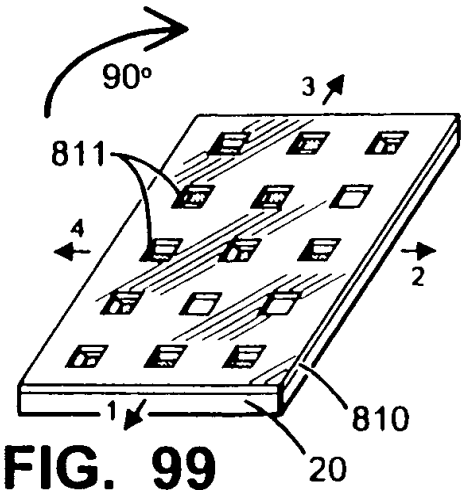


FIG._99

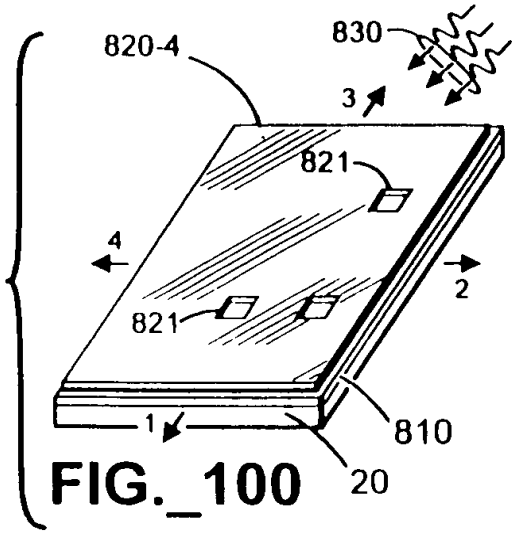


FIG._100

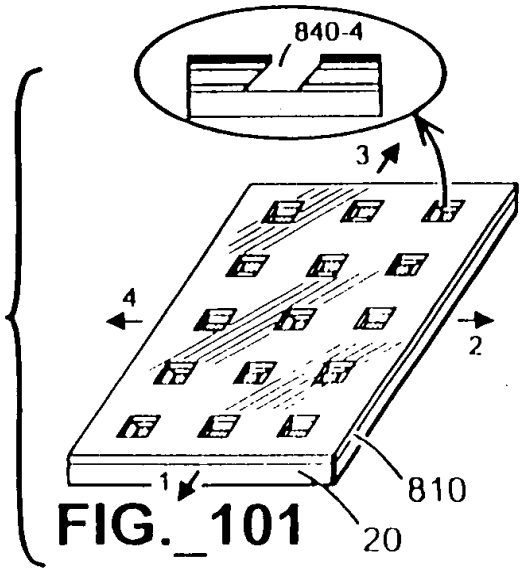


FIG._101

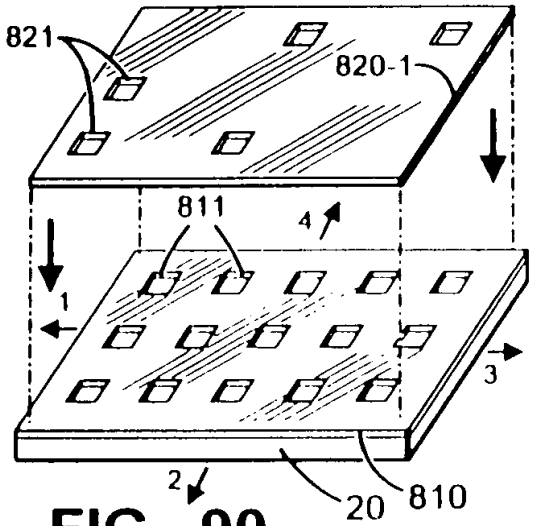


FIG._90

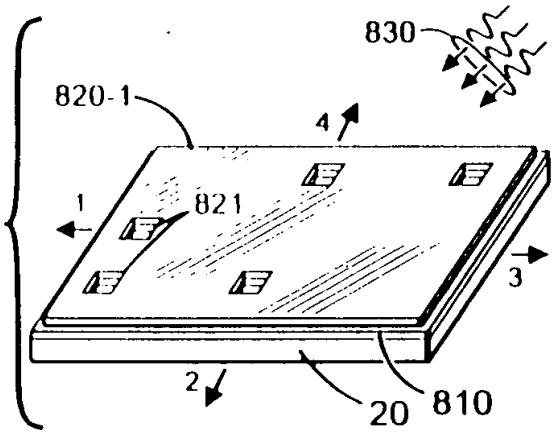


FIG._91

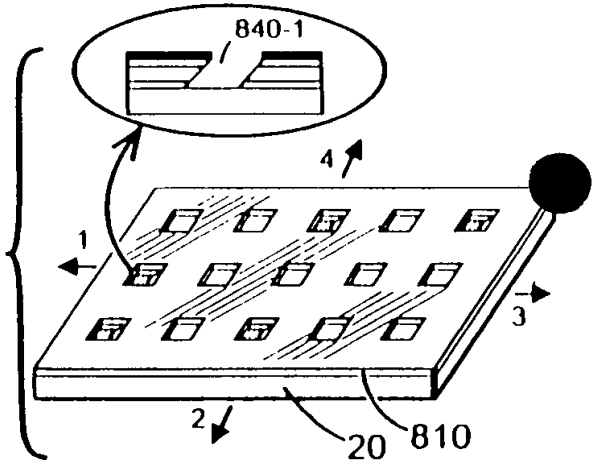


FIG._92

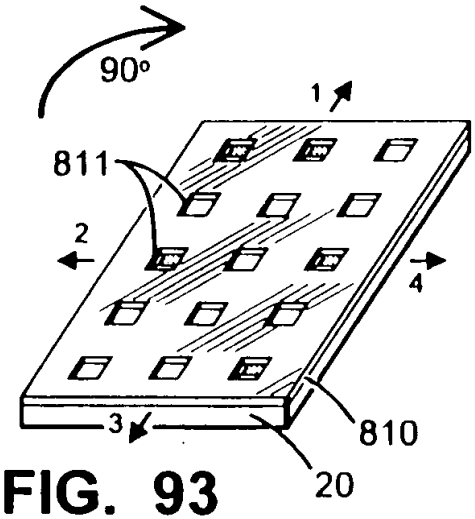


FIG._93

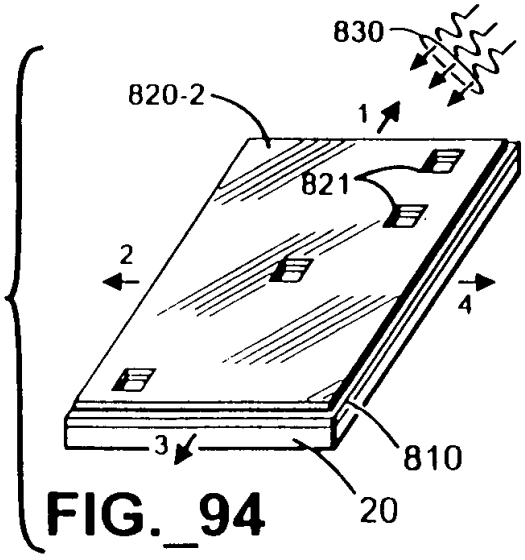


FIG._94

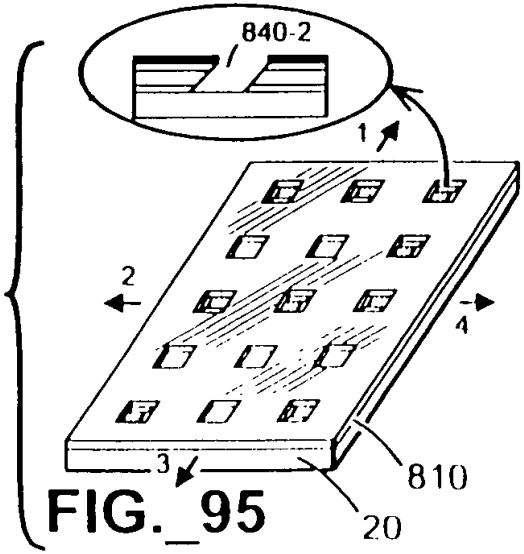


FIG._95

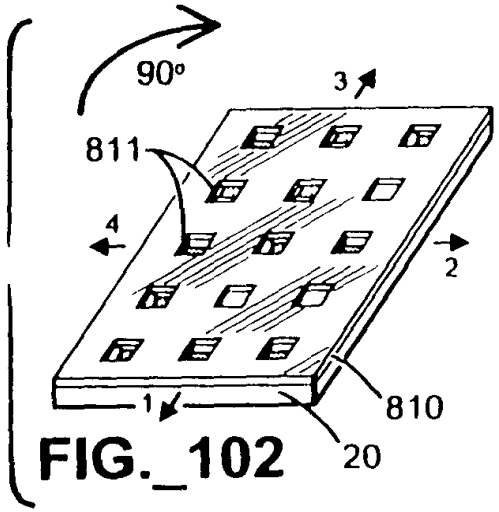


FIG._102

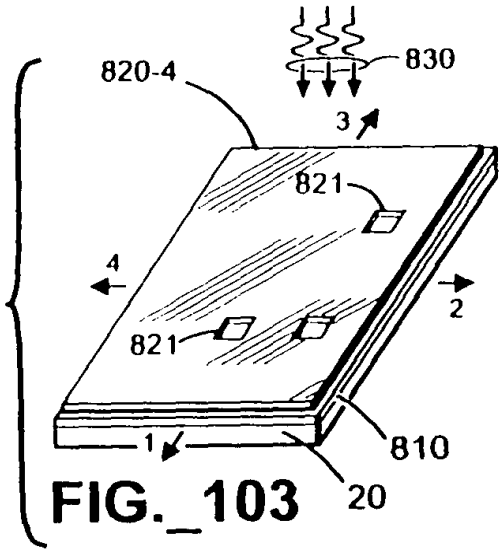


FIG._103

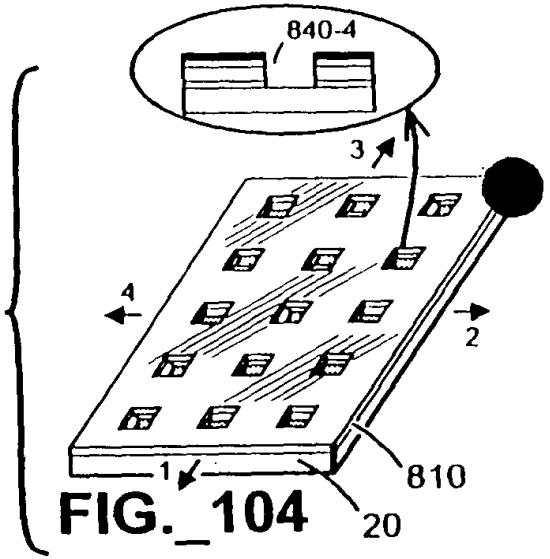


FIG._104

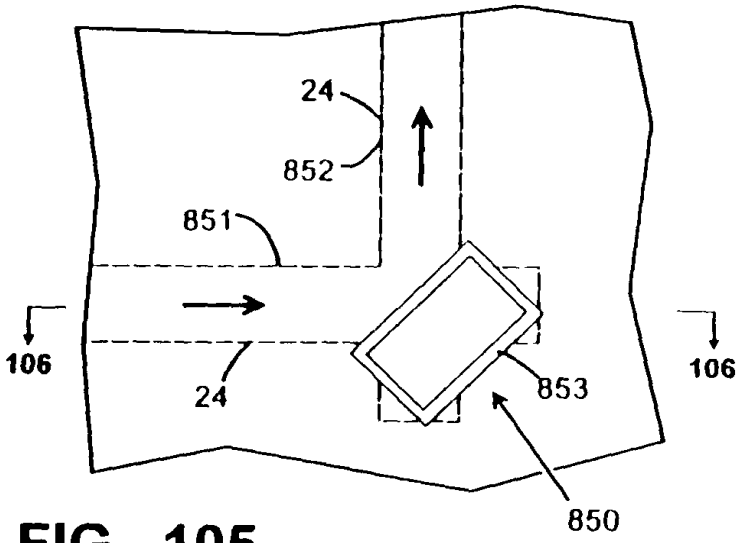


FIG._105

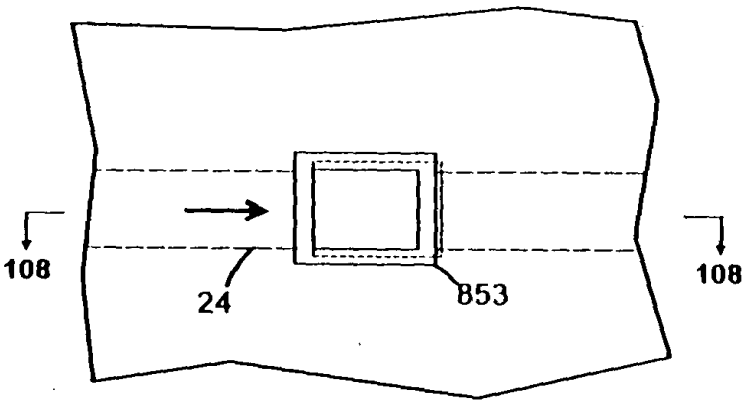


FIG._107

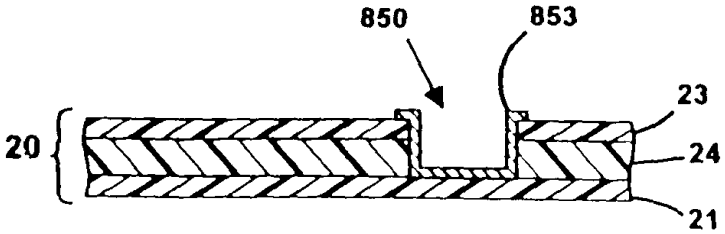


FIG._106

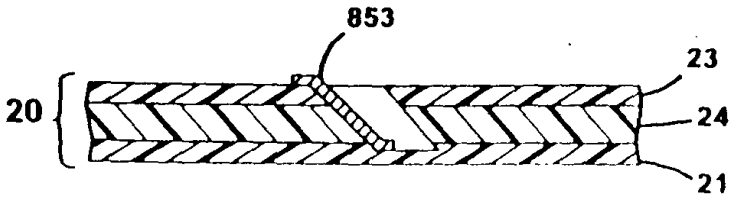


FIG._108

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GS CX/CXX OE Solution --- OE-3D-Stack

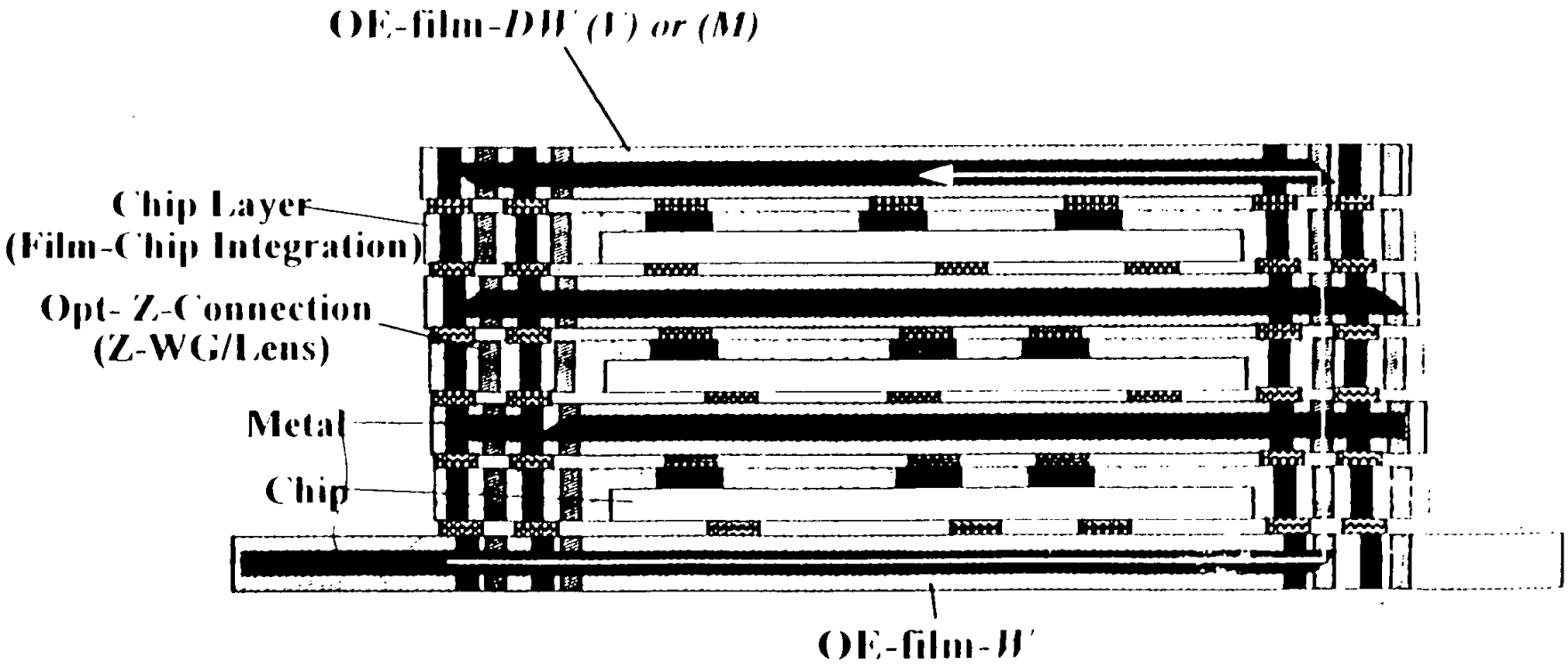
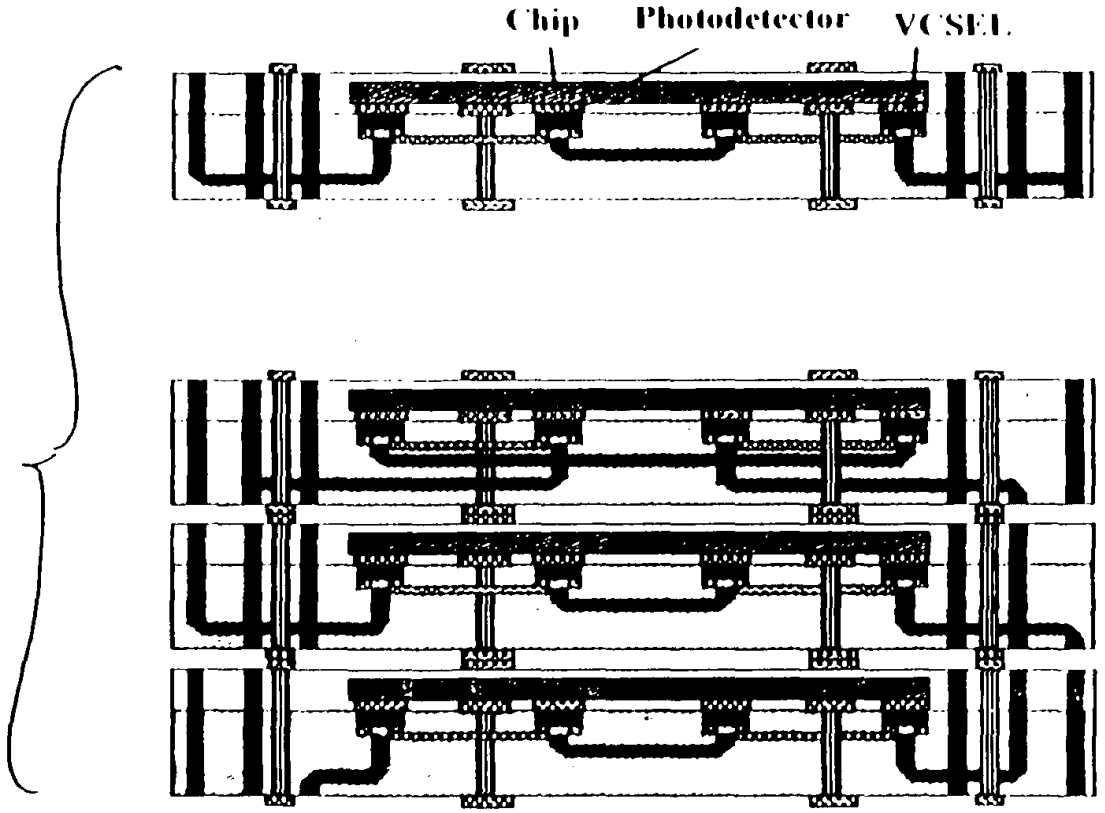


FIG. 109

A22

2/23/99-added 7



F16. 110

A23

(2/23/99) AA1 Detail picture Example for 3D-stack'

(New version of the AA1 of 2/5/99)

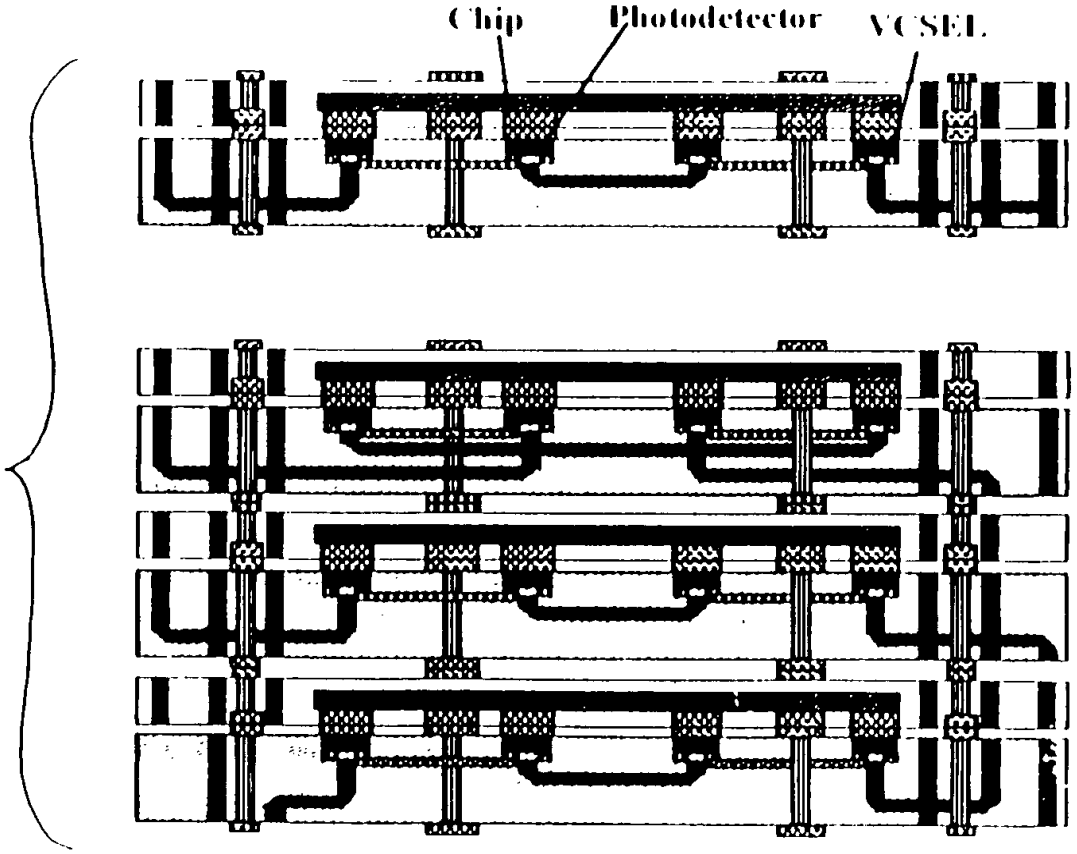


FIG. 11A

A24

(2/23/99) AA2 Detail picture Example for 3D-stack'

(New version of the AA2 of 2/5/99)

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Film/Z-Connection Application to OE-Substrate

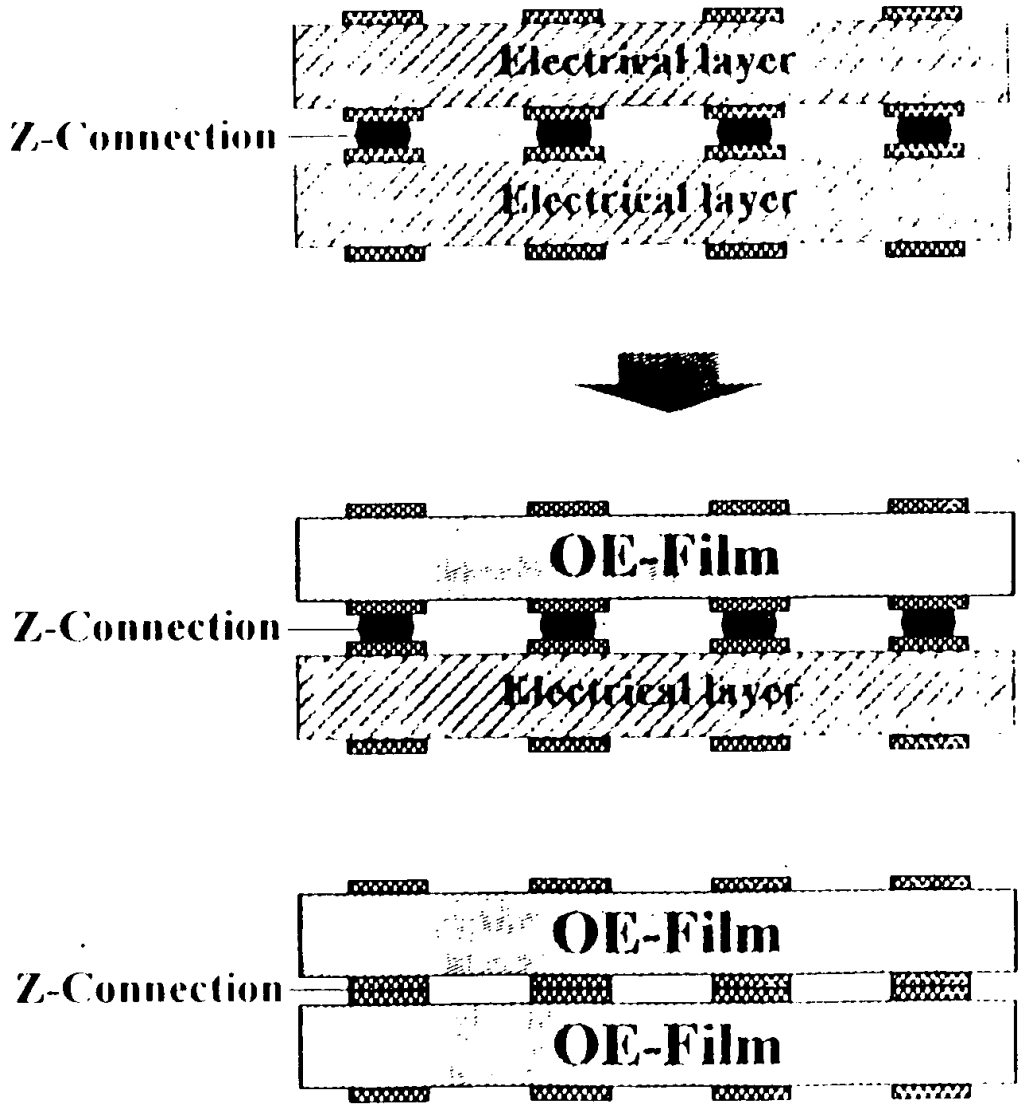


FIG. 11A

FIG. 11B

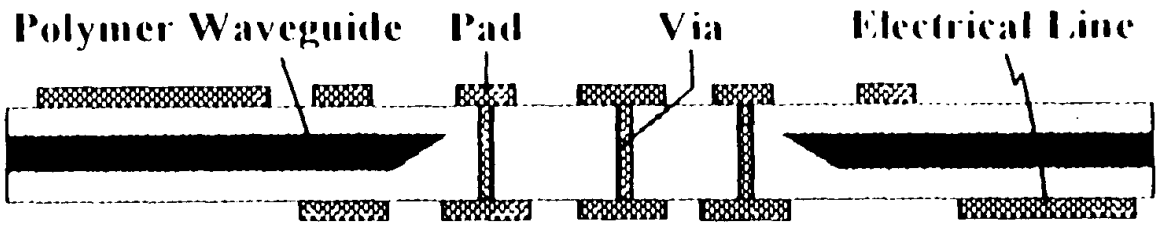
2/23/99-added 1

Figure 1

FUJITSU Computer Packaging Technologies, Inc. FCPT

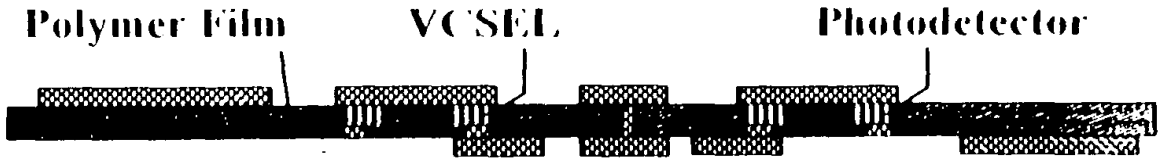
OE-Films

OE-film-*W*



F16.113

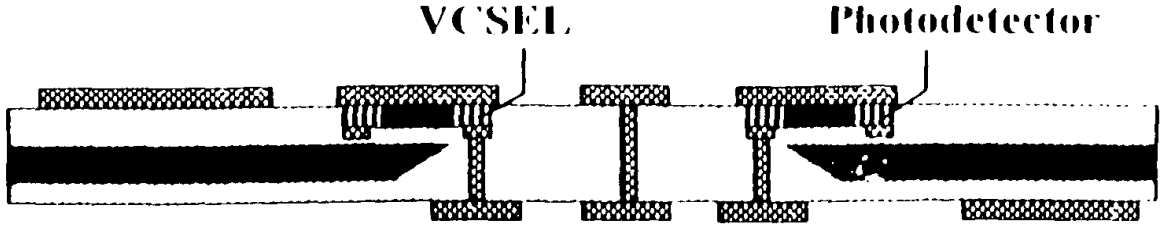
OE-film-*D*



F16.114

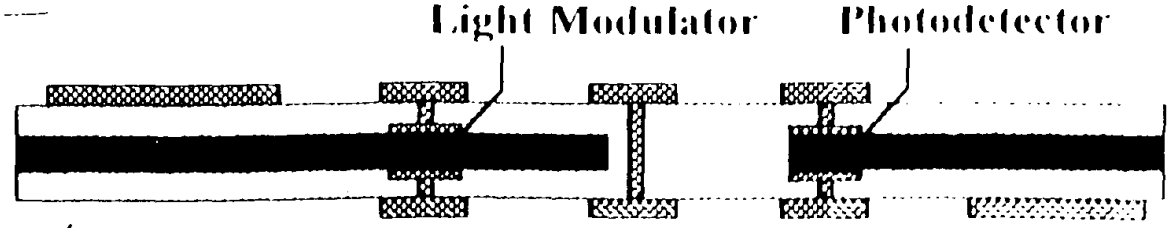
A8

OE-film-*DW(V)*



F16.115

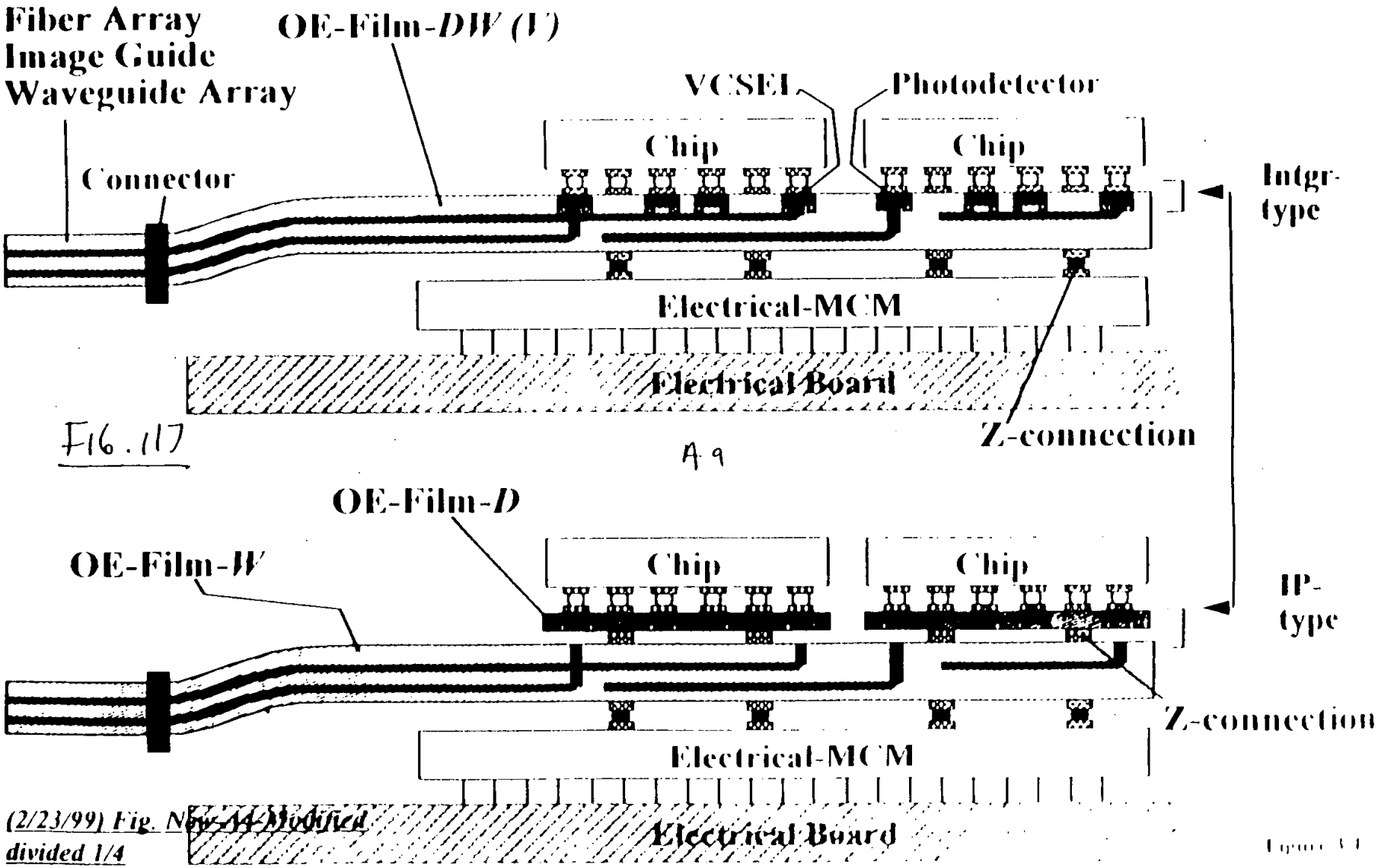
OE-film-*DW(M)*



2/17/99-added 2

F16.116

FOLM



F16.117

A9

(2/23/99) Fig. New-14-Modified
divided 1/4

F16.118

FOLM

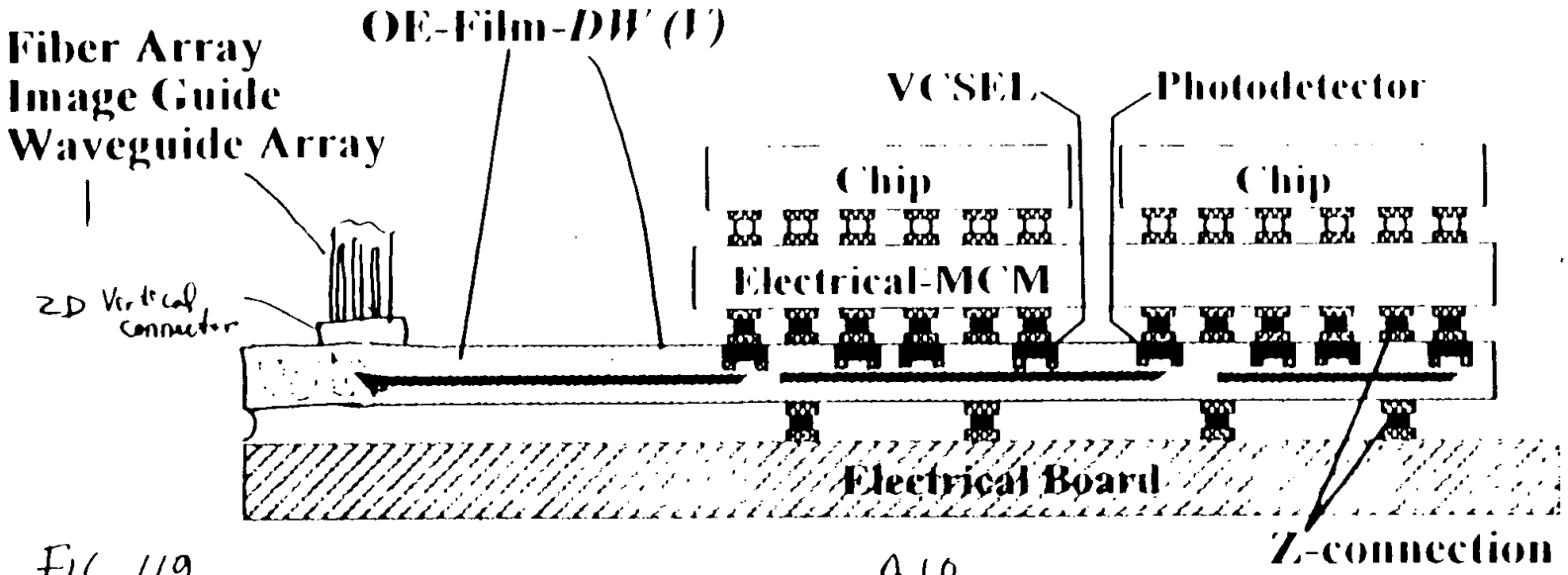
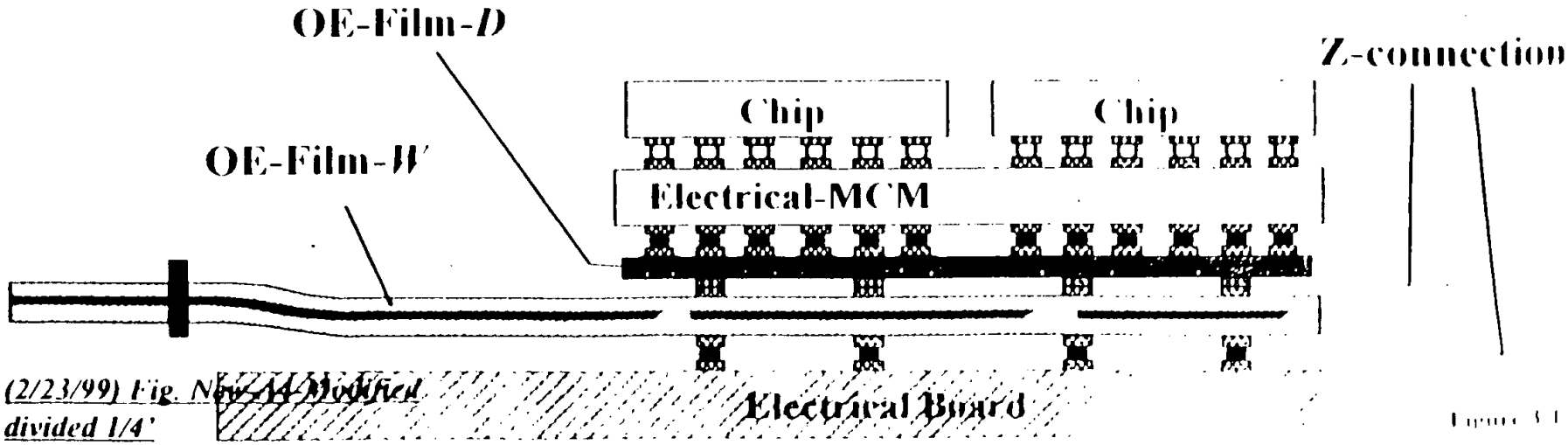


Fig. 11A

A10

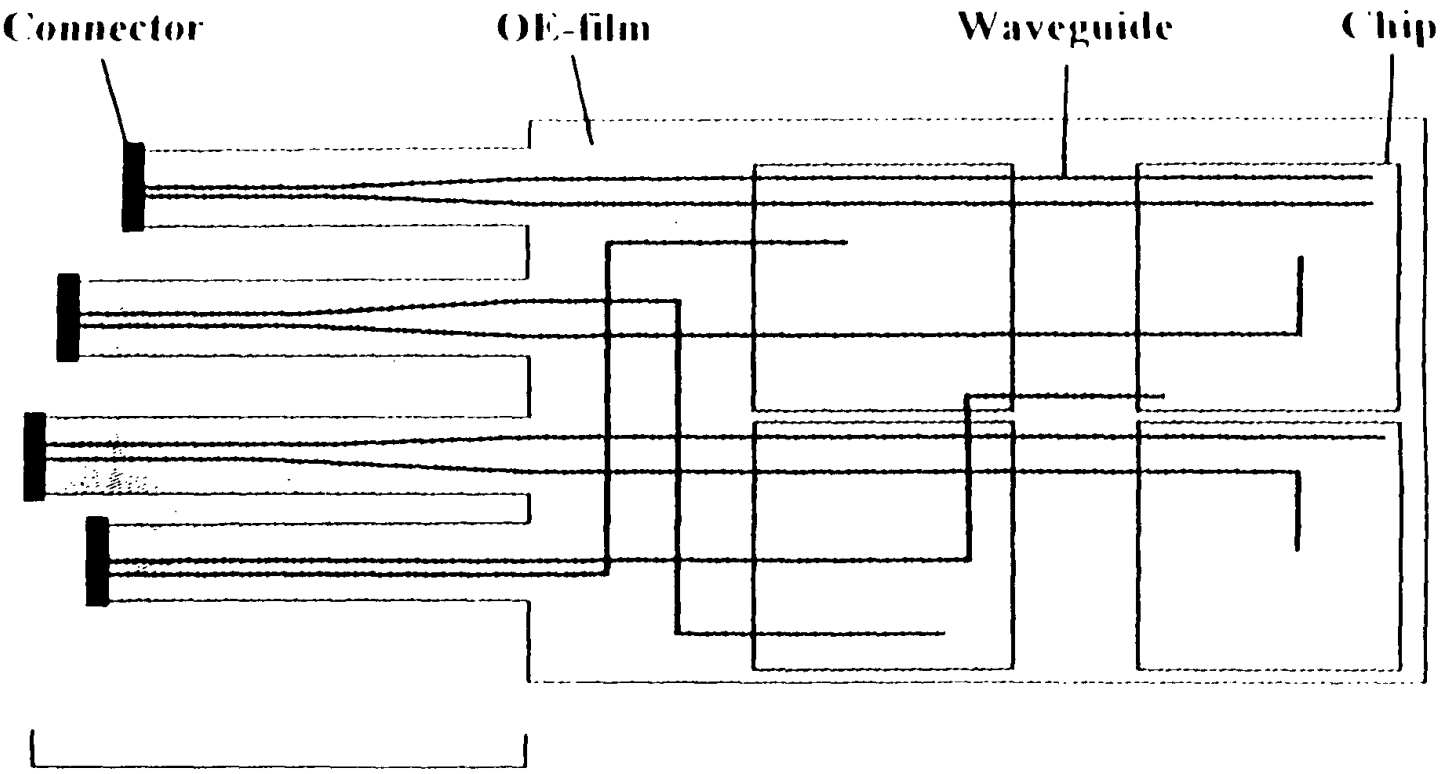


(2/23/99) Fig. New-14 Modified divided 1/4'

Fig. 11C

FUJITSU Computer Packaging Technologies, Inc. FCPT

FOLM with Optical Path Length Controller, Connector Buffer



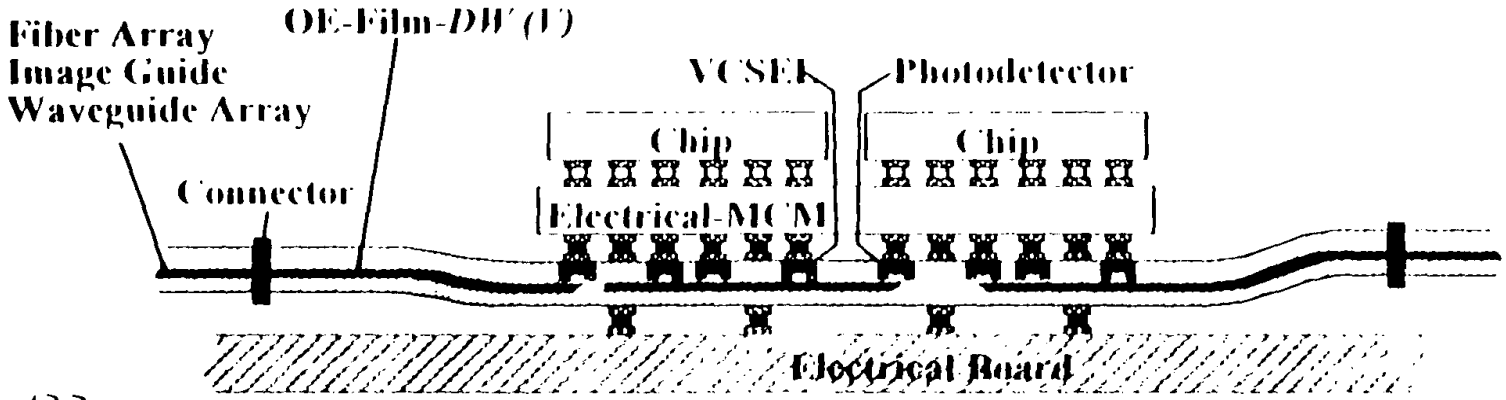
A11

FIG. 12

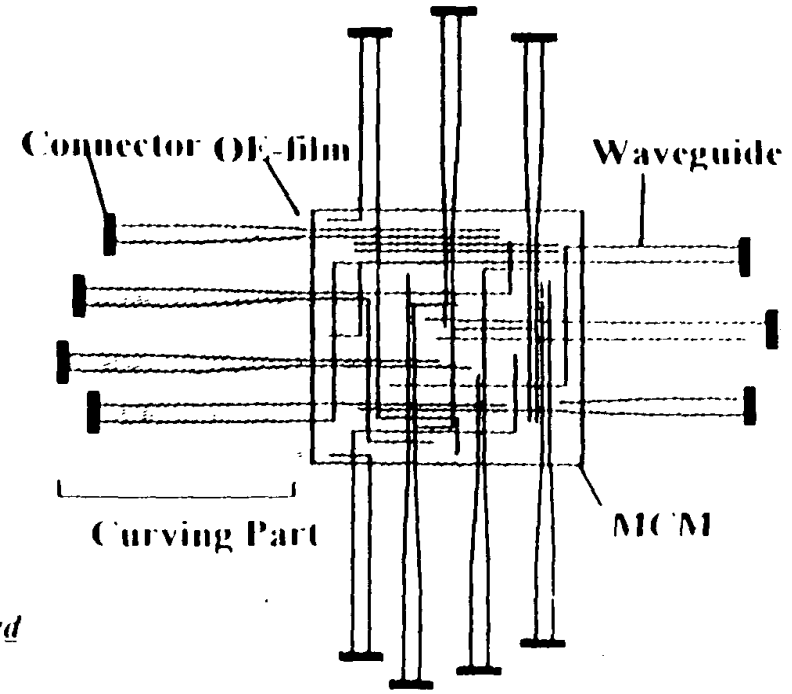
(2/17/99) Fig. New-A4-Modified
divided 2/4

FUJITSU Computer Packaging Technologies, Inc. FCPT

FOLM with Optical Path Length Controller, Connector Buffer



F16. 123



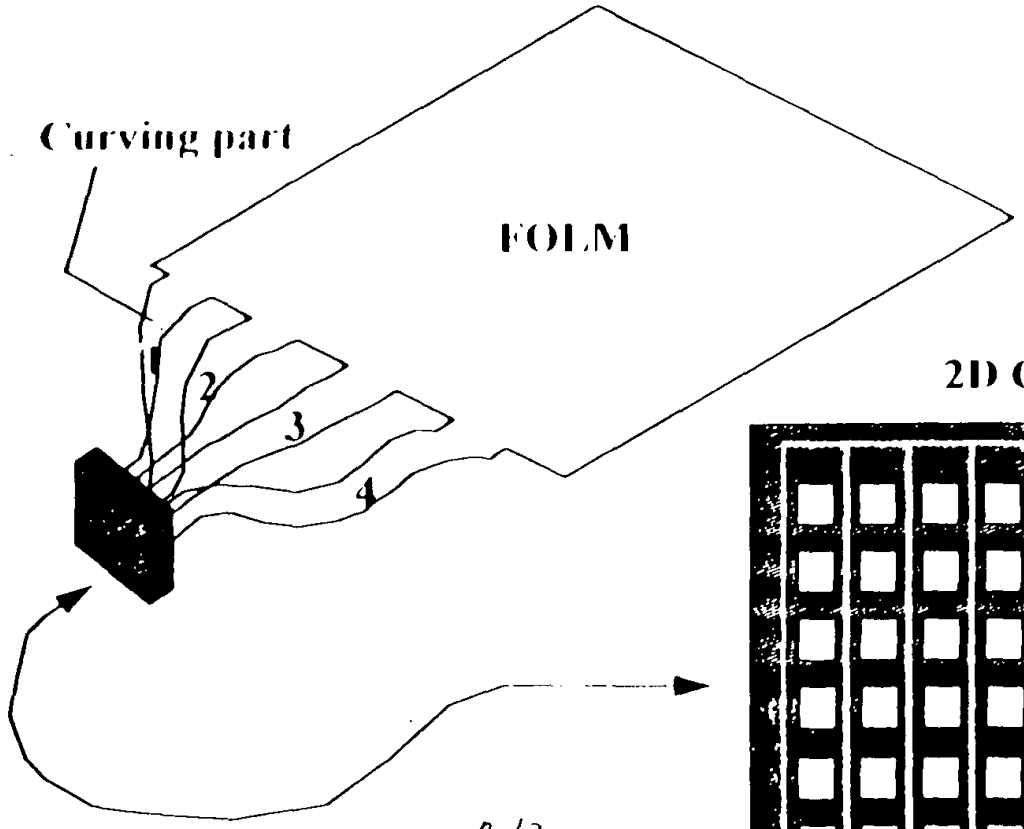
F16. 122

A12

(2/23/99) Fig. New-A4-Modified divided 2/4'

FUJITSU Computer Packaging Technologies, Inc. FCPT

FOLM with 2D Waveguide Connector

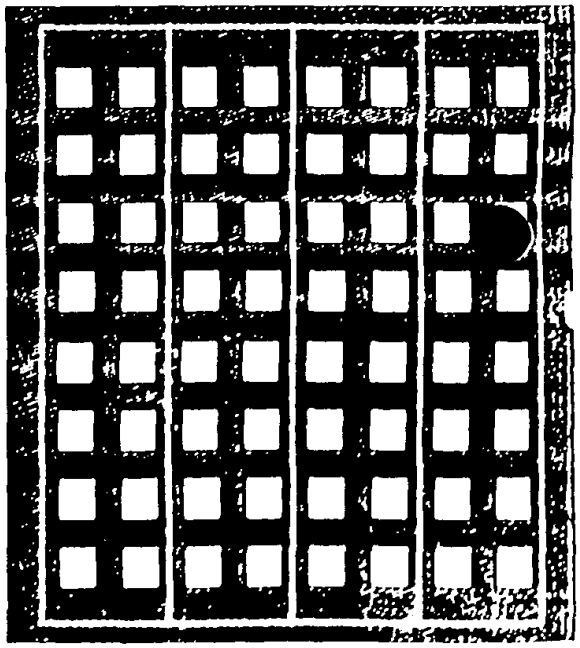


A13

FIG. 12A

2D Connector cross-section

core



(for Single-layer waveguide) (for 2 layer waveguide)

(2/23/99) Fig. New-A4-Modified divided 3/4'

FUJITSU Computer Packaging Technologies, Inc. FCPT

FOLM: High-Speed Option

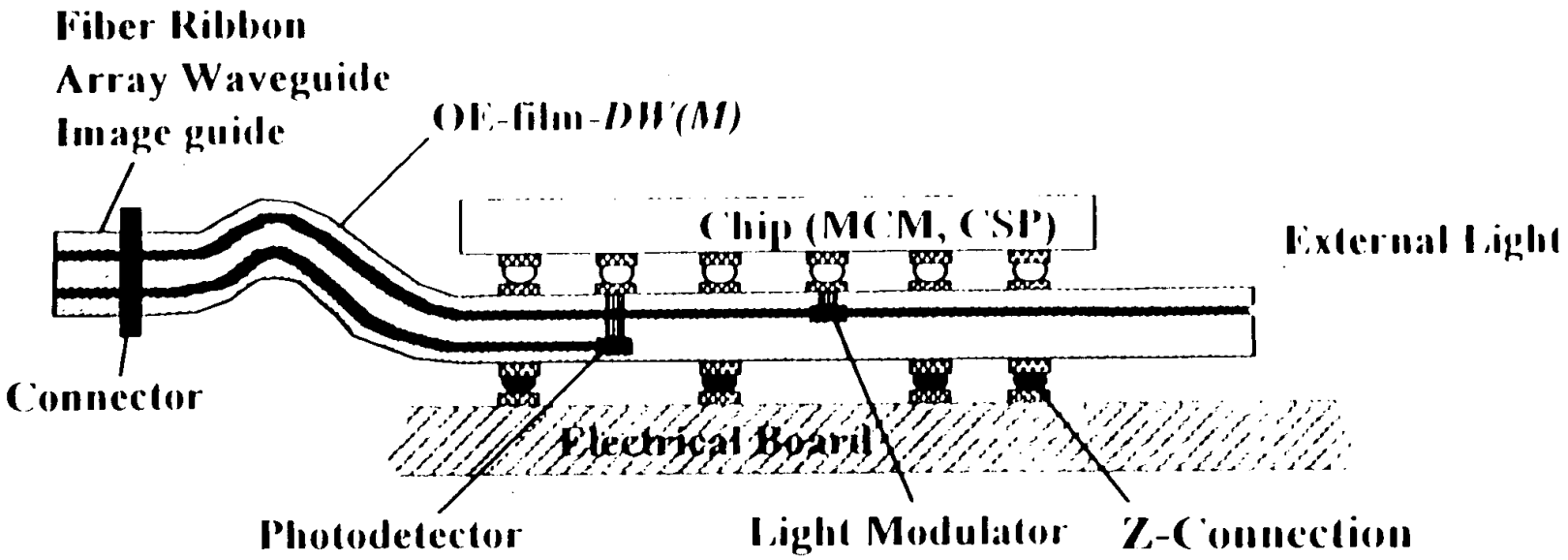


FIG. 12S

A 14

(2/17/99) Fig. New-A4-Modified
divided 4/4

FUJITSU Computer Packaging Technologies, Inc. FCPT

FOLM Structure Example (Overall)

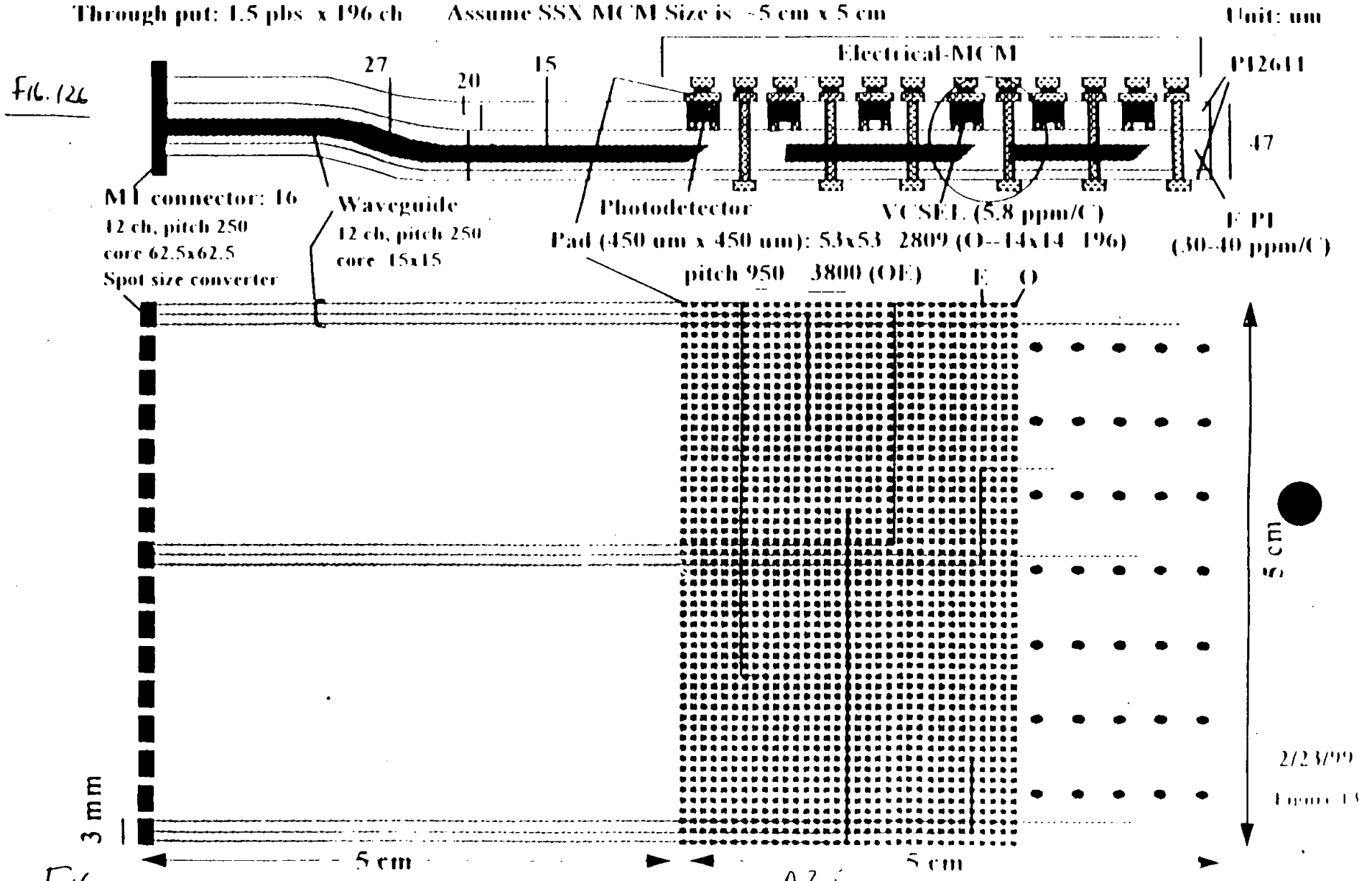
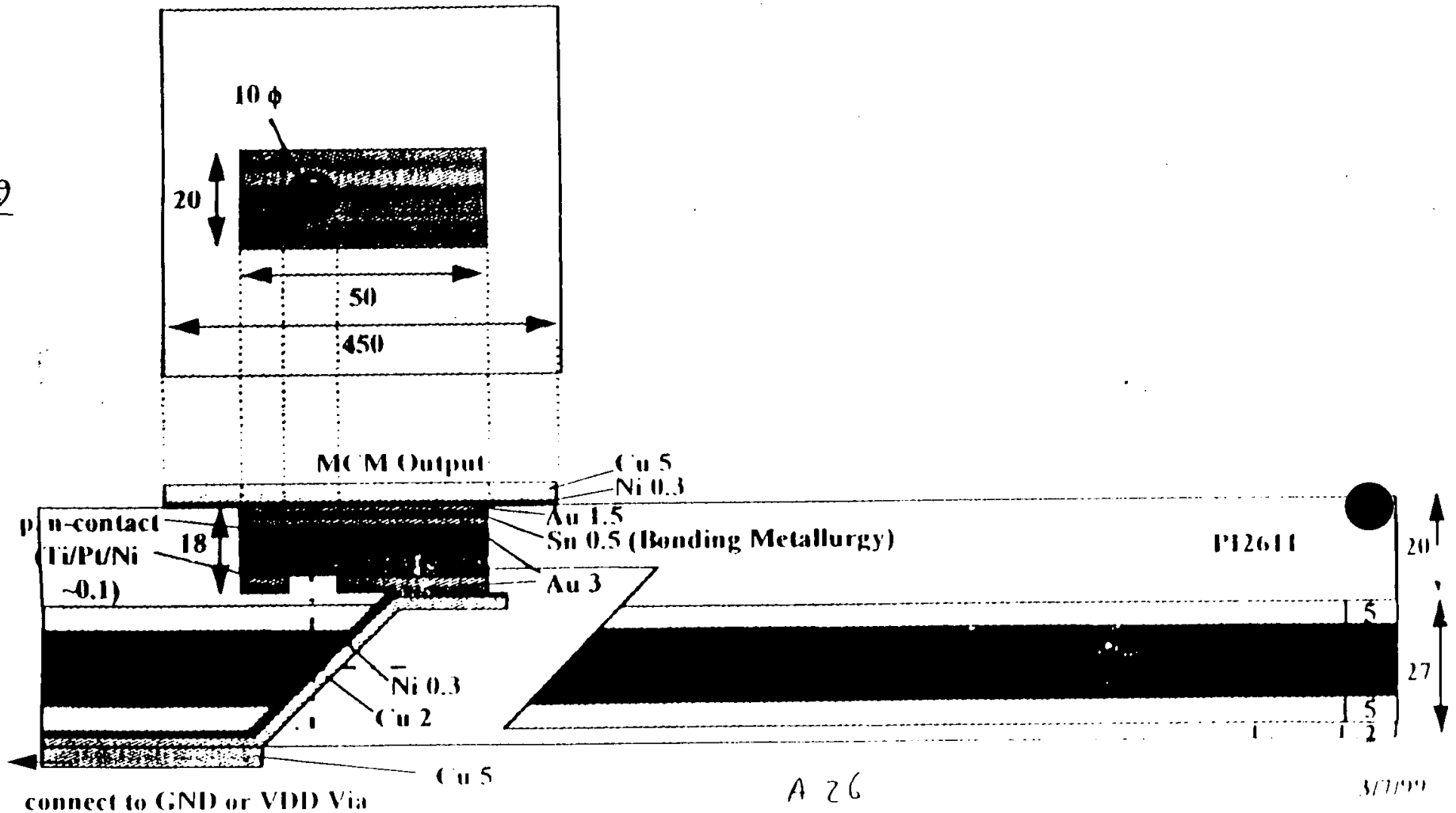


Fig. 126

Fig. 127

FOLM Structure Example (VCSEL part)

FIG. 12A



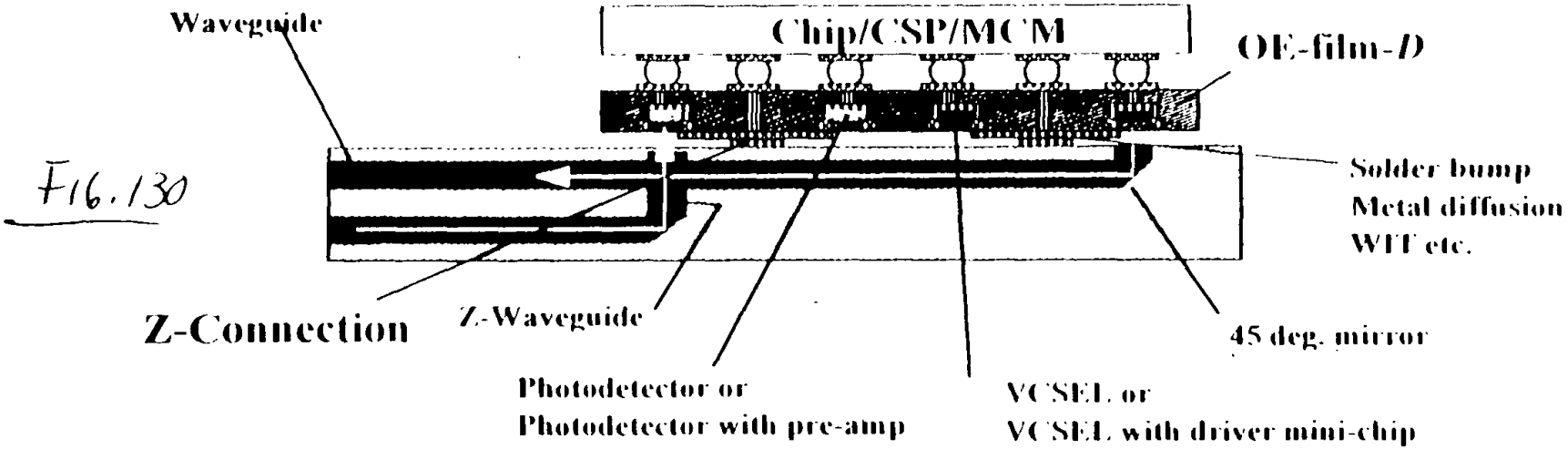
A 26

3/7/99

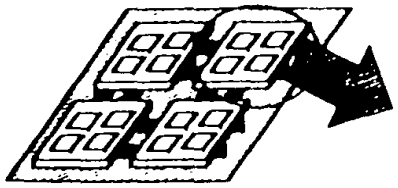
Unit : um

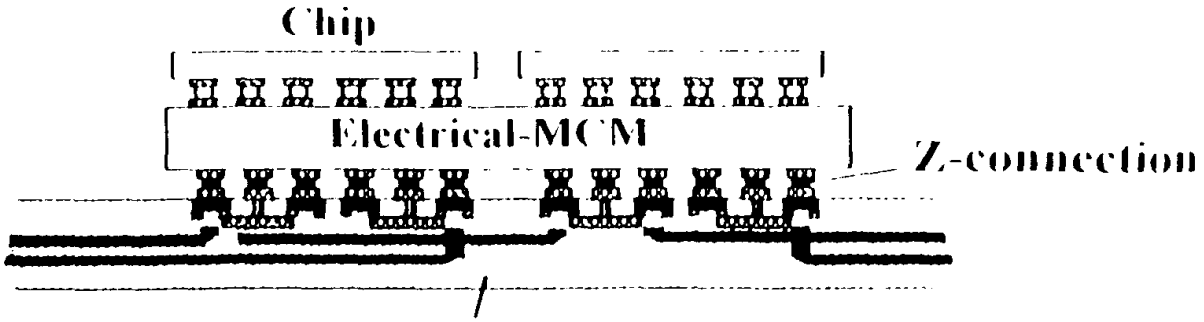
FIG. 12B

OE-film: OE-IP, OE-Film-MCM



F16.130





F16.131

A15

(2/23/99) Fig. New-A1-Modified'

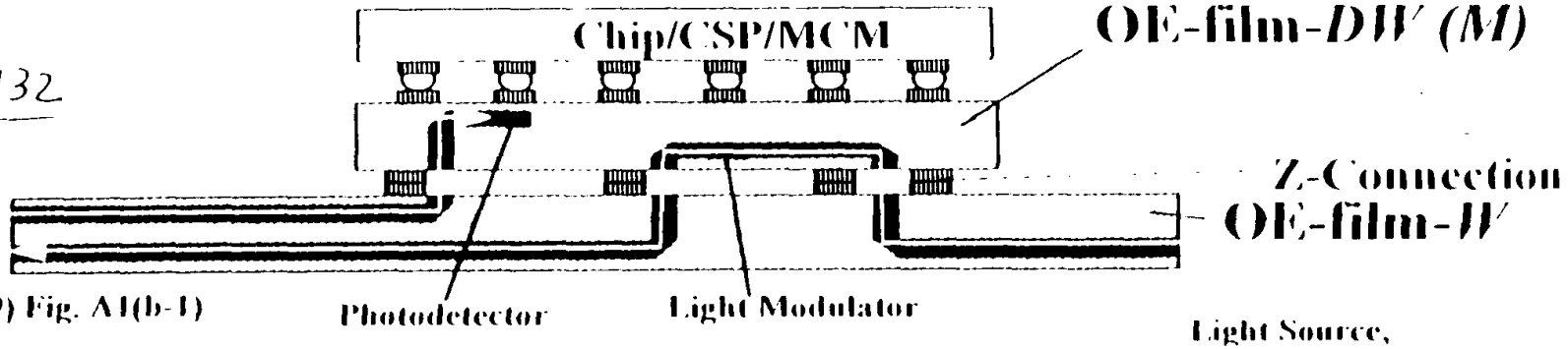
Figure

A15 3/3/99 — 1.5.12

FUJITSU Computer Packaging Technologies, Inc. FCPT

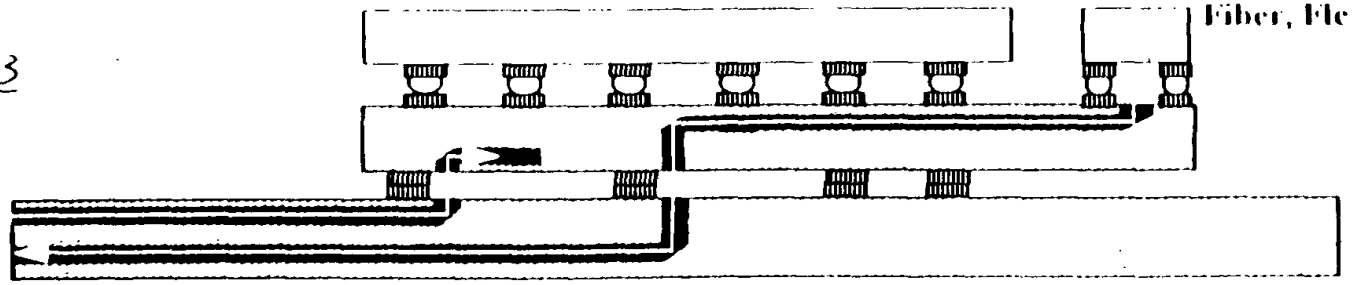
OE-film: Light Modulator Transmitters

F16.132



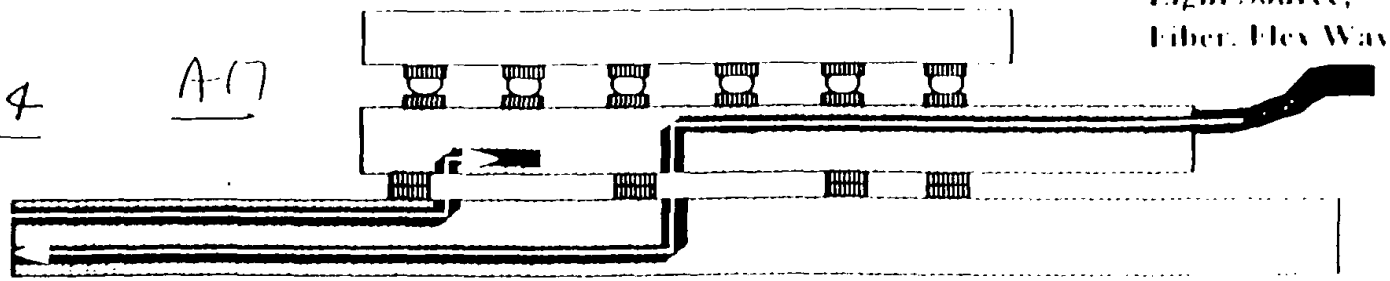
(2/17/99) Fig. A1(b-1)

F16.133



(2/17/99) Fig. A1(b-2)

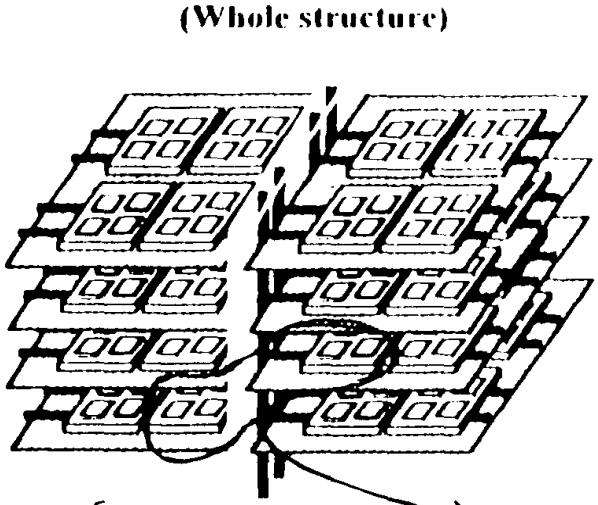
F16.134 A-17



(2/23/99) Fig. A1(b-3)

Examples of Light Modulators: Electro-Optic (EO) Modulator, Electro Absorption (EA) Modulator

OE-film: Both-Side Packaging

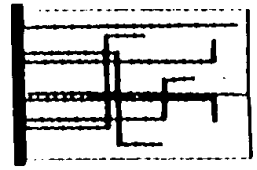


F16. 13S

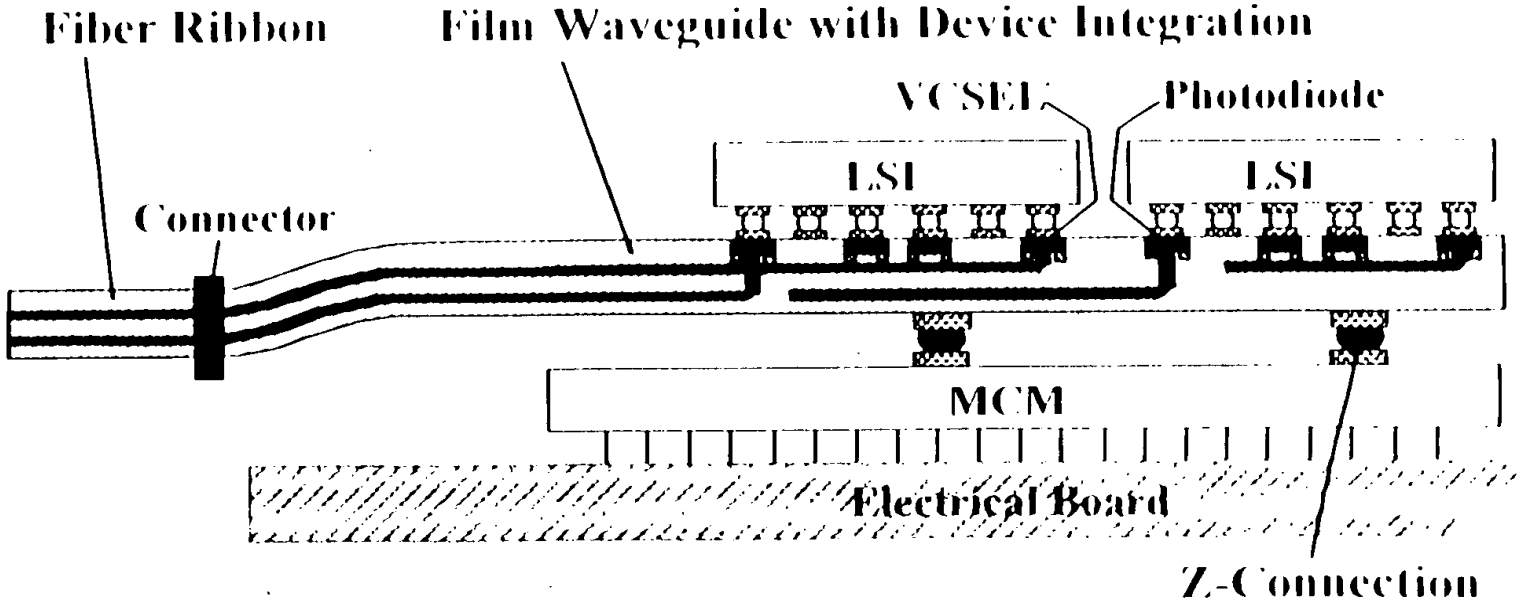
A 18

2/23/99-added 3'

Direct Jump from LSI



F16.136



F16.137

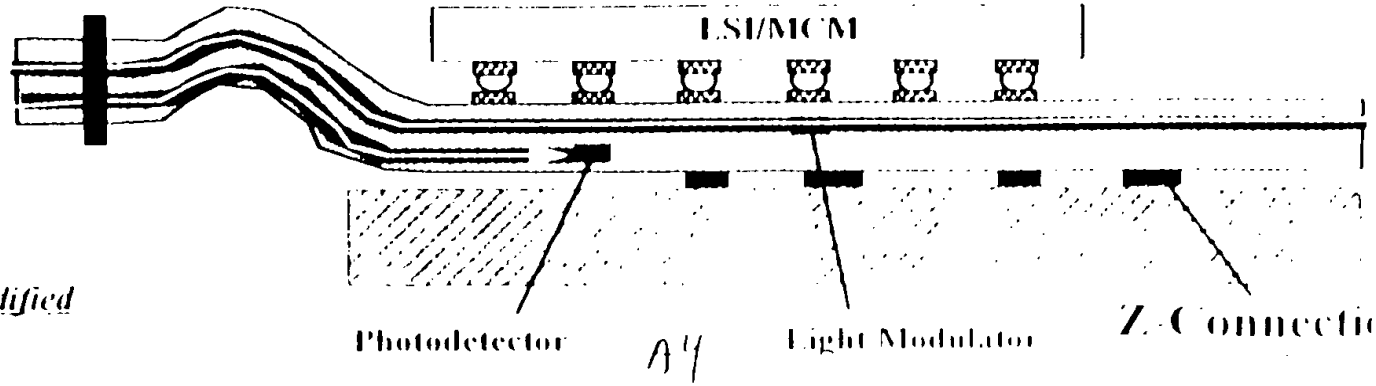
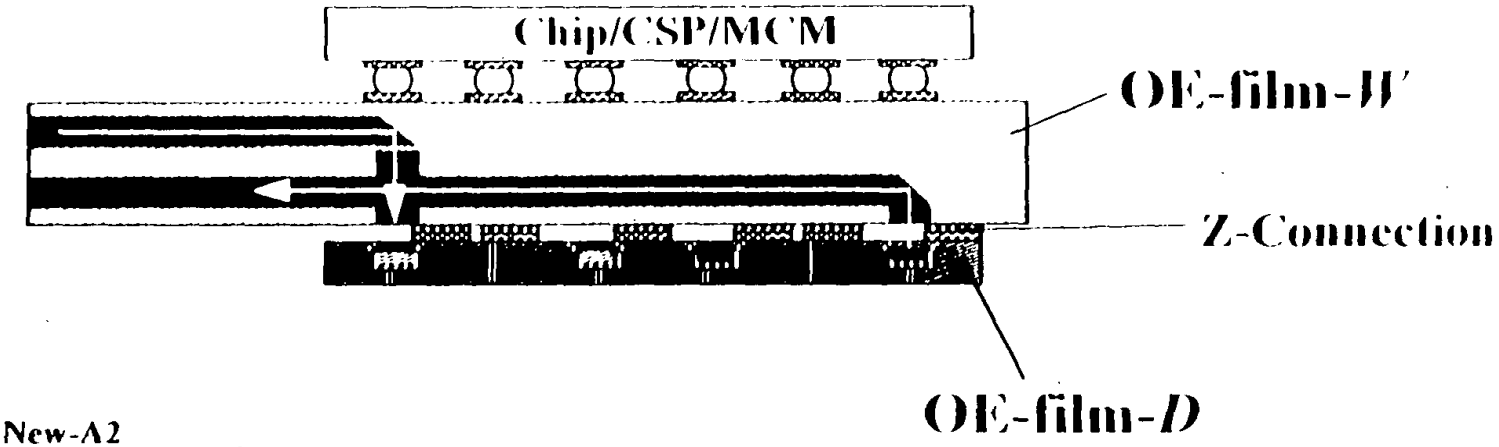


Fig. New-A4-Modified

A4

OE IP is Placed on the Oposit Side

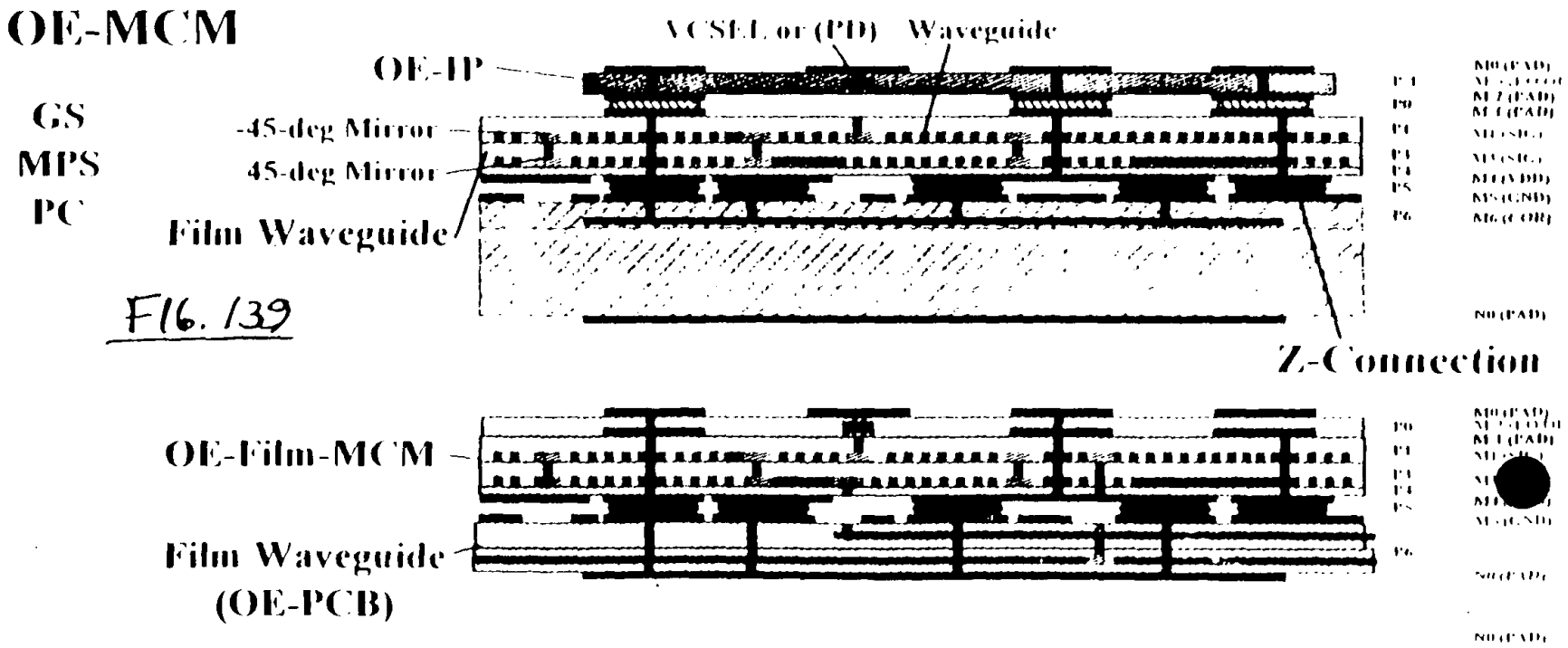


(2/23/99) Fig. New-A2

FIG. 13B

A20

OE MCM



F16. 139

F16. 140

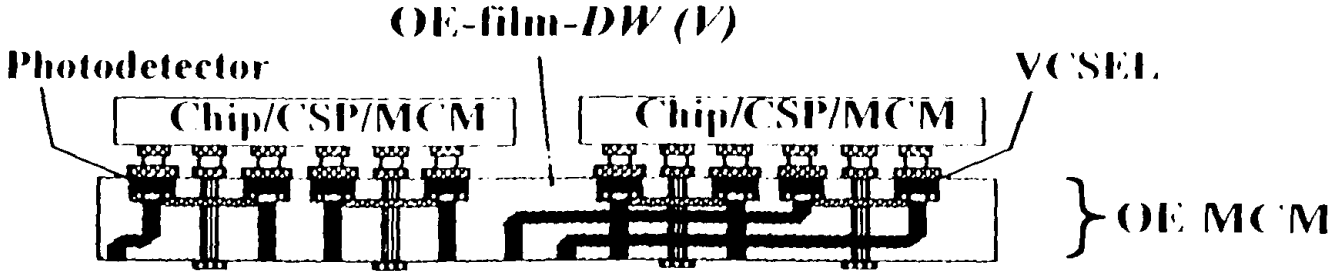
A5

Fig. A5-Modifica

A5 1/18/99

OE-film: Smart Pixel

Fig. 141

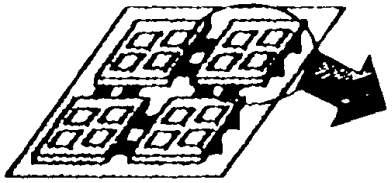


A16

Fig. 142

2/23/99-added 6'

OE-Film/OE-Film Stack --- Back-Side Connection



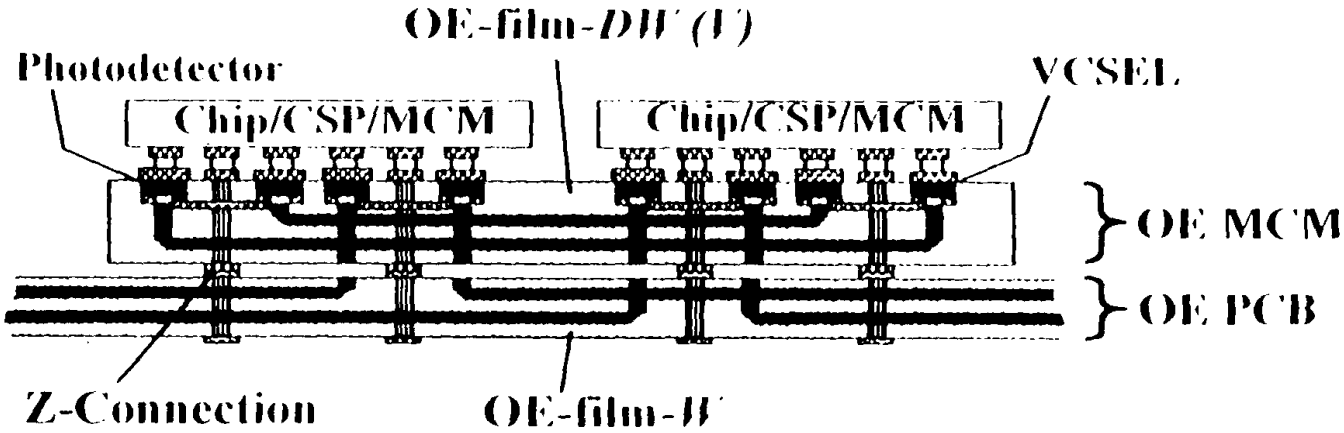


FIG. 14B

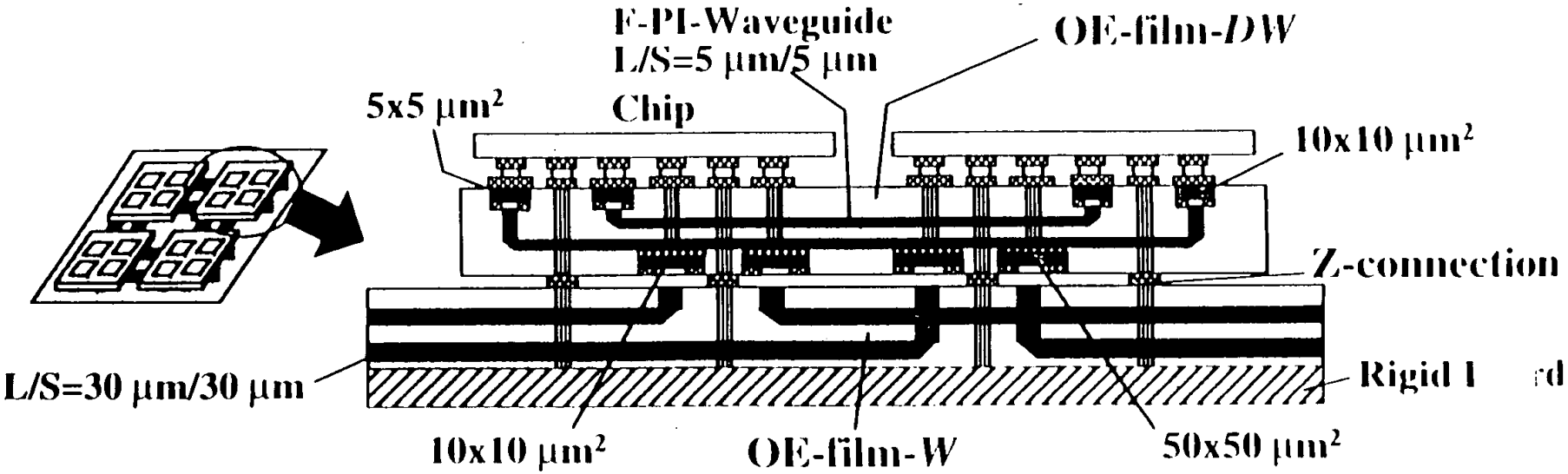
A19

2/23/99-added 4'

A19 2/7/00

FUJITSU Computer Packaging Technologies, Inc. FCPT

OE-Film/OE-Film Stack --- Back-Side Connection



D1

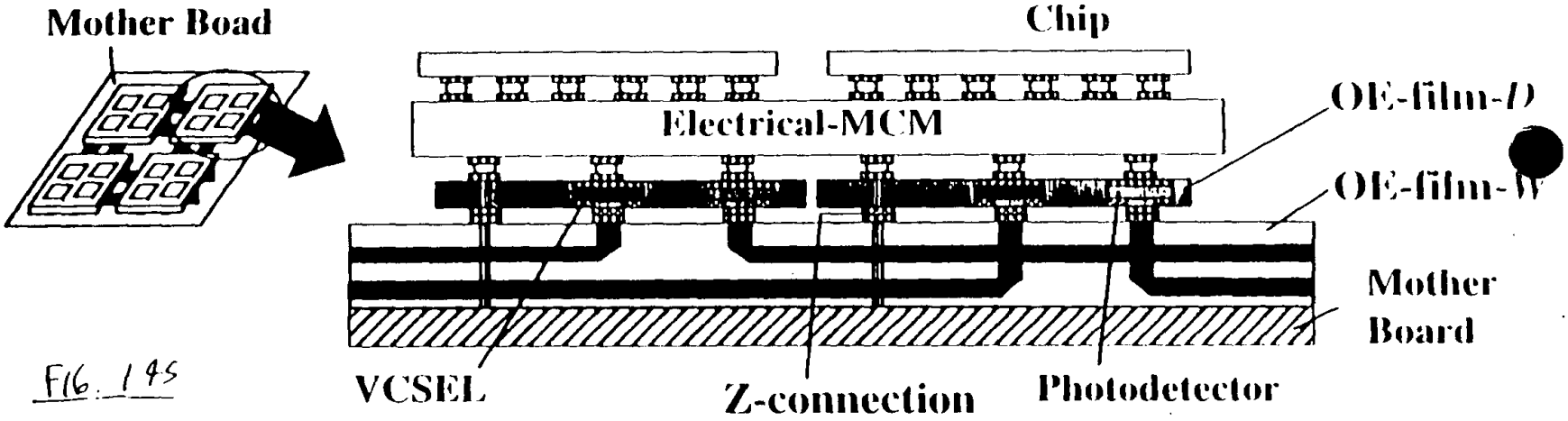
F16. 144

Fig. 3/18/99-1

D1 3/18/99

FUJITSU Computer Packaging Technologies, Inc. FCPT

OE-MCM/OE-Bord Stack



F16. 14S

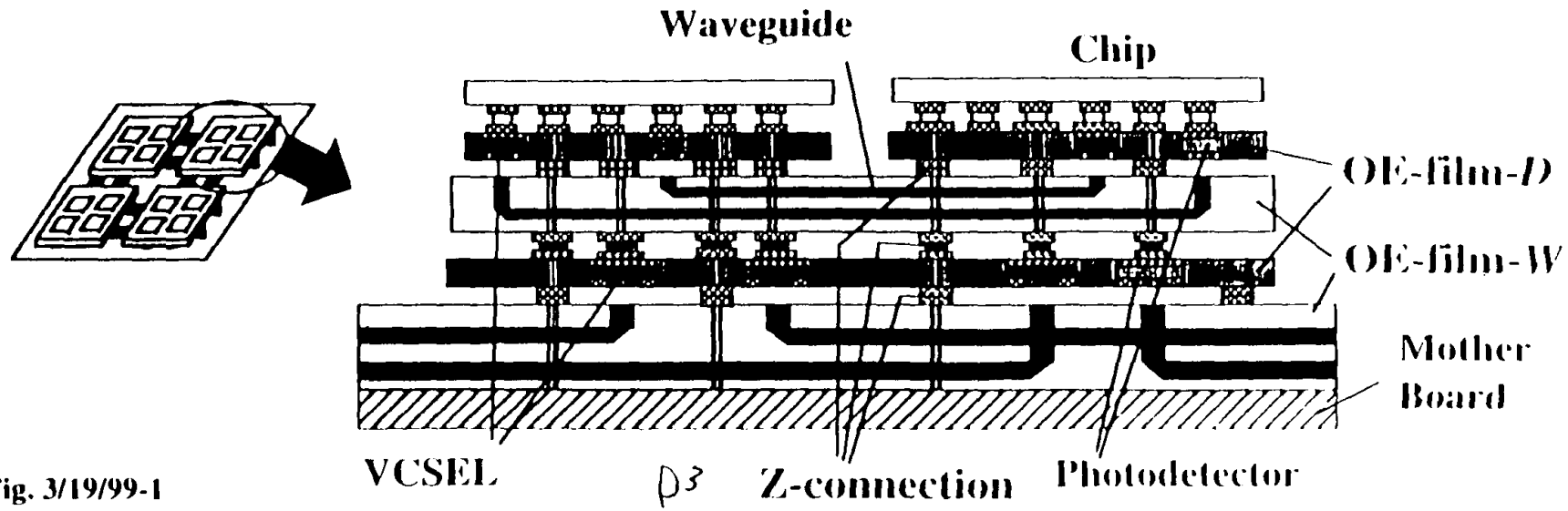
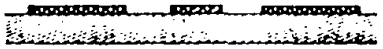


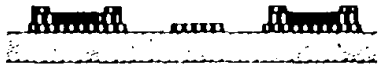
Fig. 3/19/99-1

F16. 14b

D3 3/18/99

Device Integration Process

(1) Pads/Lines formation  FIG. 14J

(2) Placement of Thin film devices  FIG. 14B

(3) Polymer coat  FIG. 14J

(4) Planarization  FIG 13

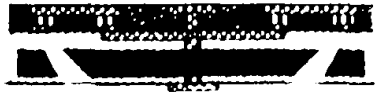
(5) Vias/Pads/Lines formation  FIG 15J

(6) Substrate removal  FIG 18 2

OE-film-*D*

A 2 /

(6') Jump to the waveguide formation process

 FIG 10,3

OE-film-*DW(T)*

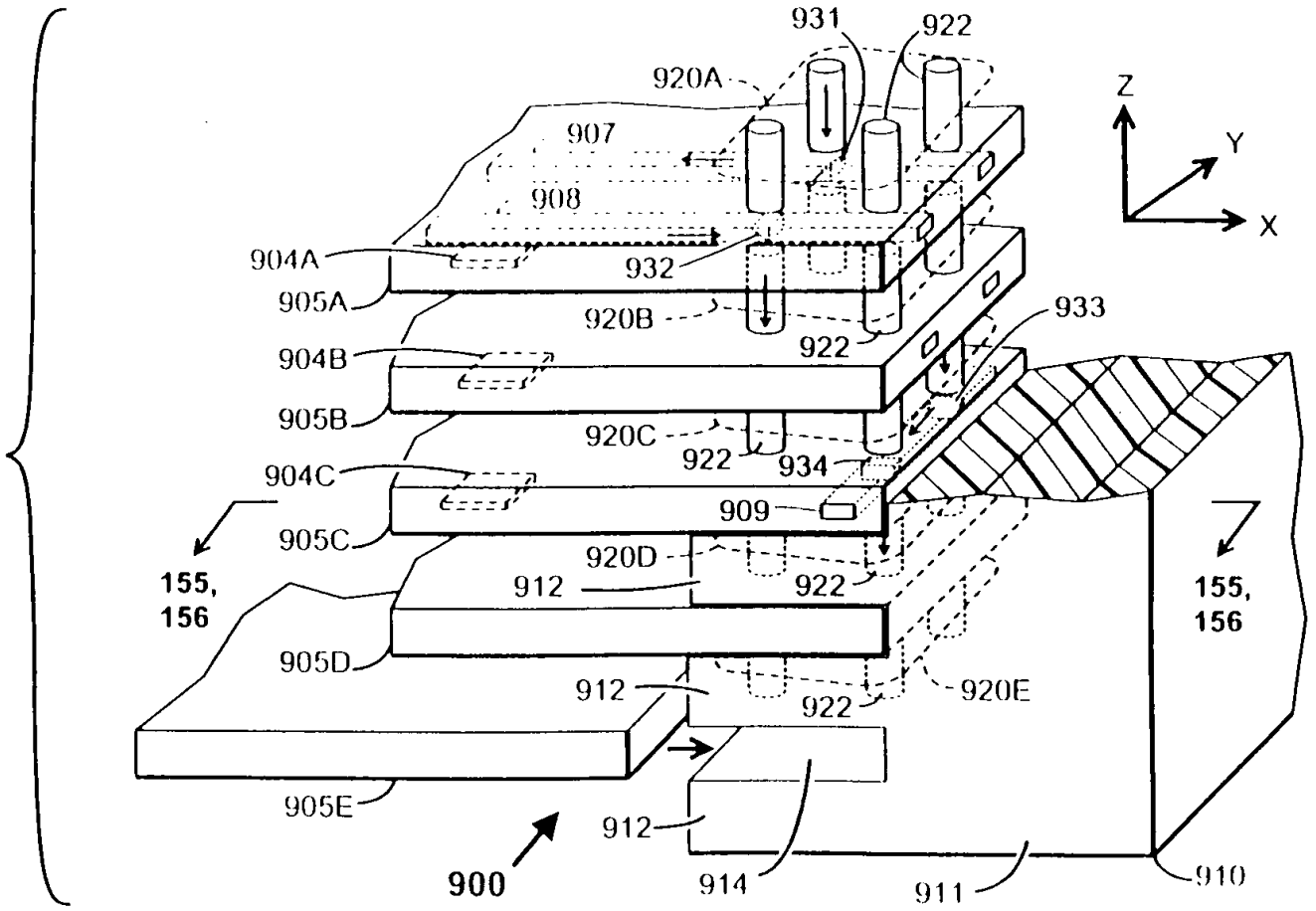


FIG._154

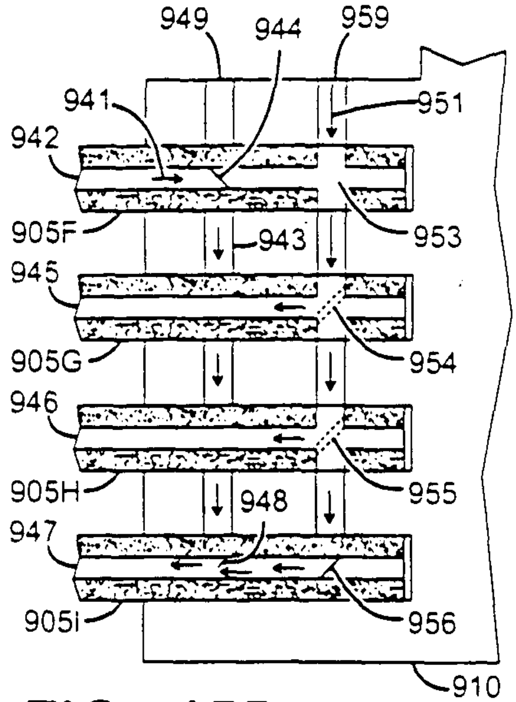


FIG._155

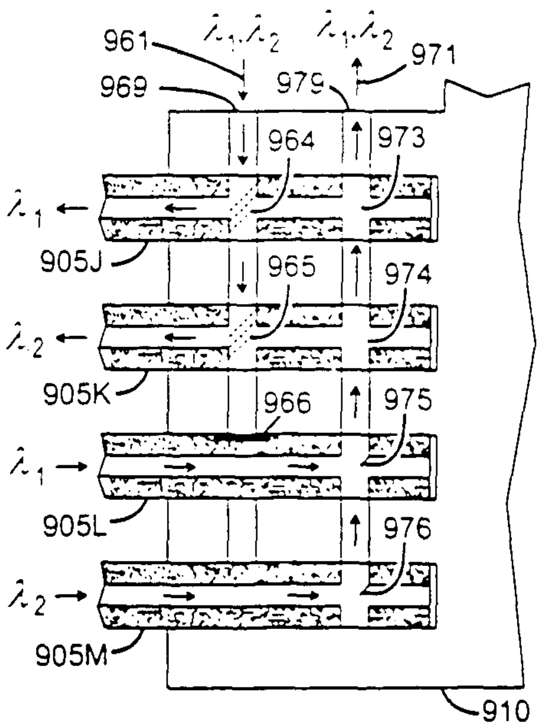


FIG._156-1

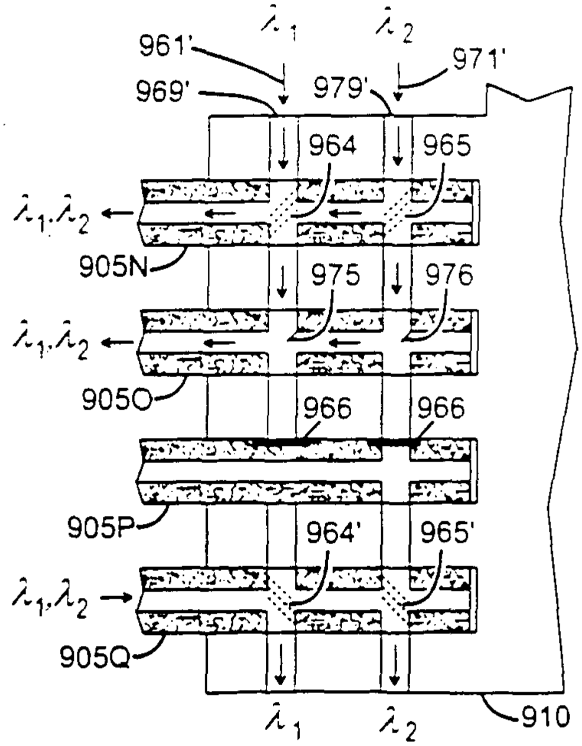


FIG._156-2

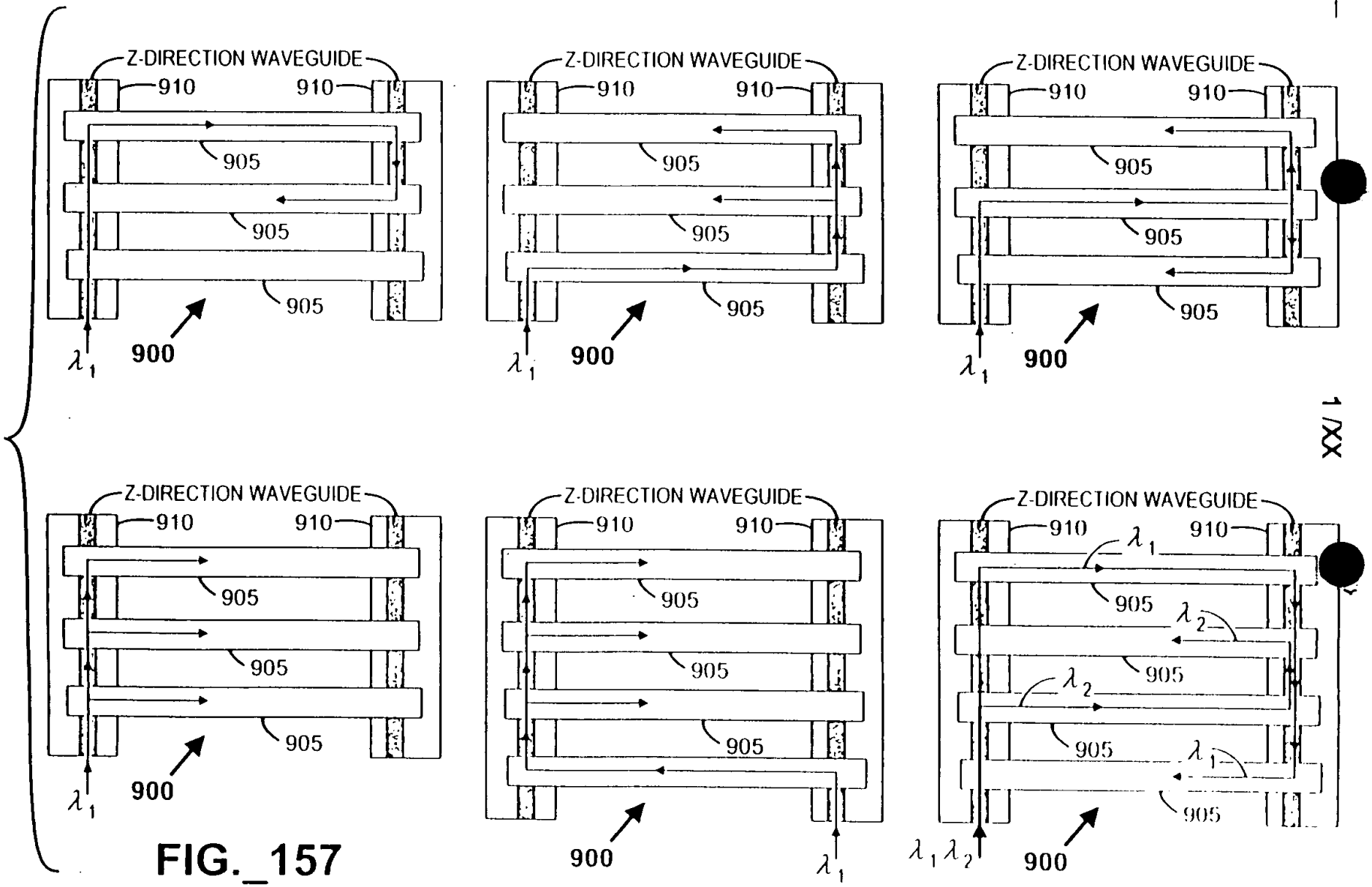


FIG._157

6136/

1/XX

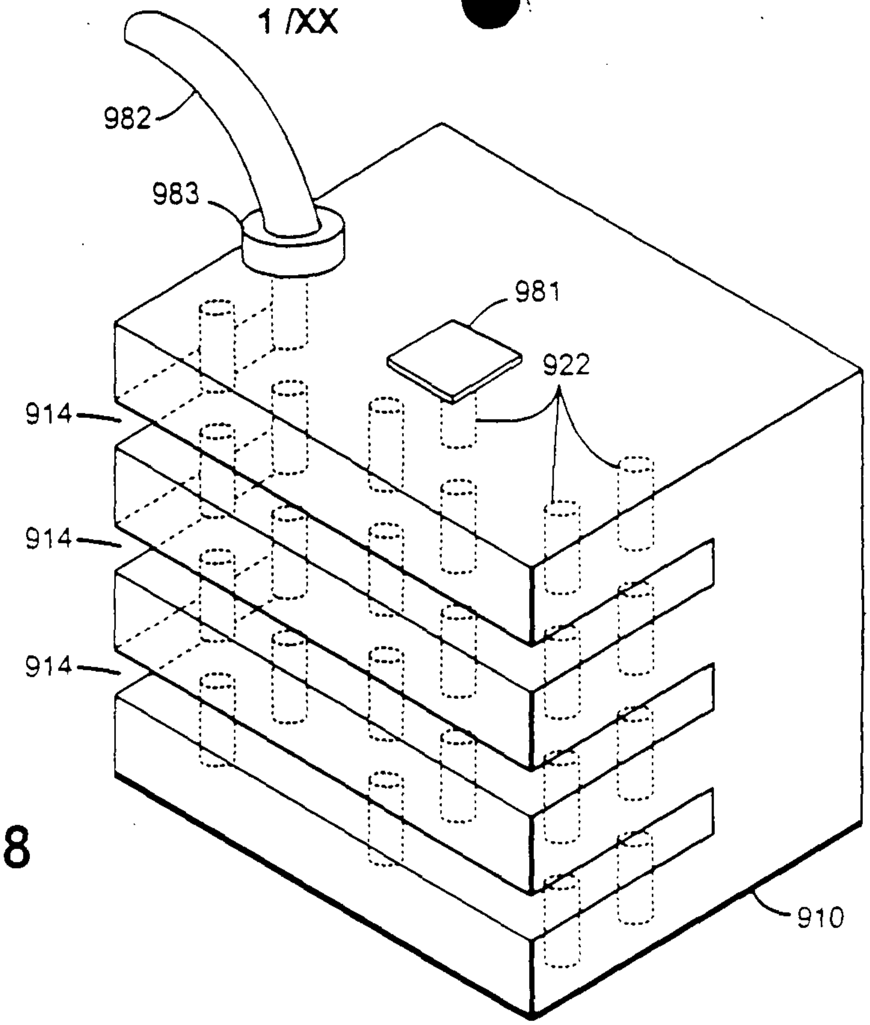


FIG._158

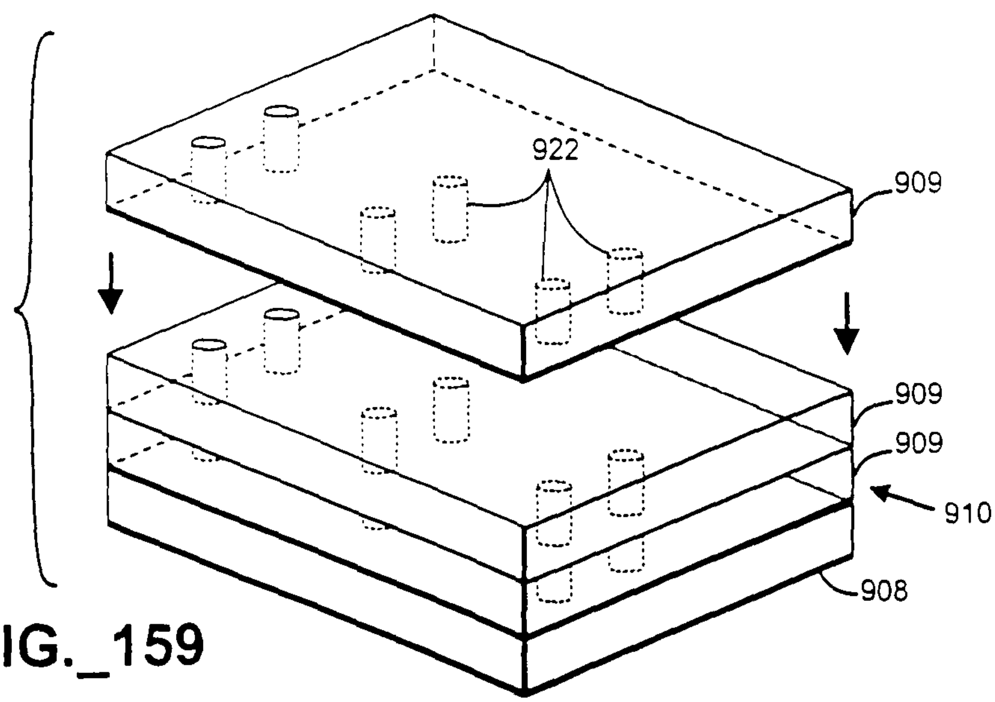


FIG._159

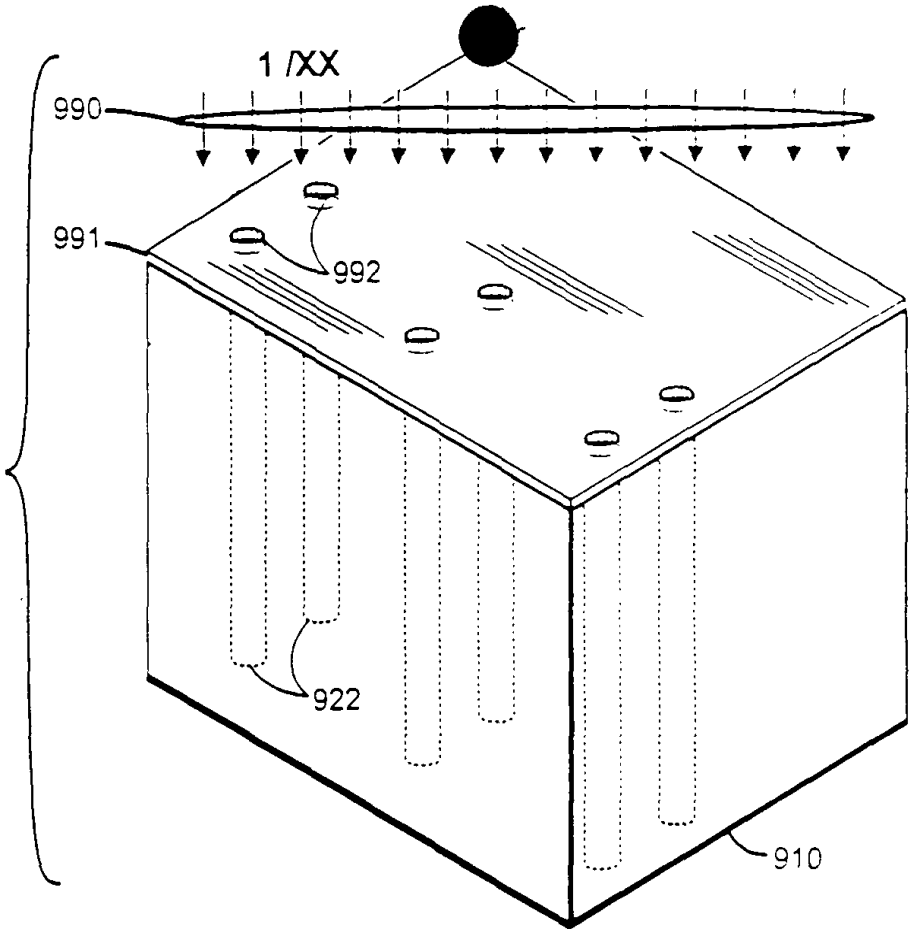


FIG._160

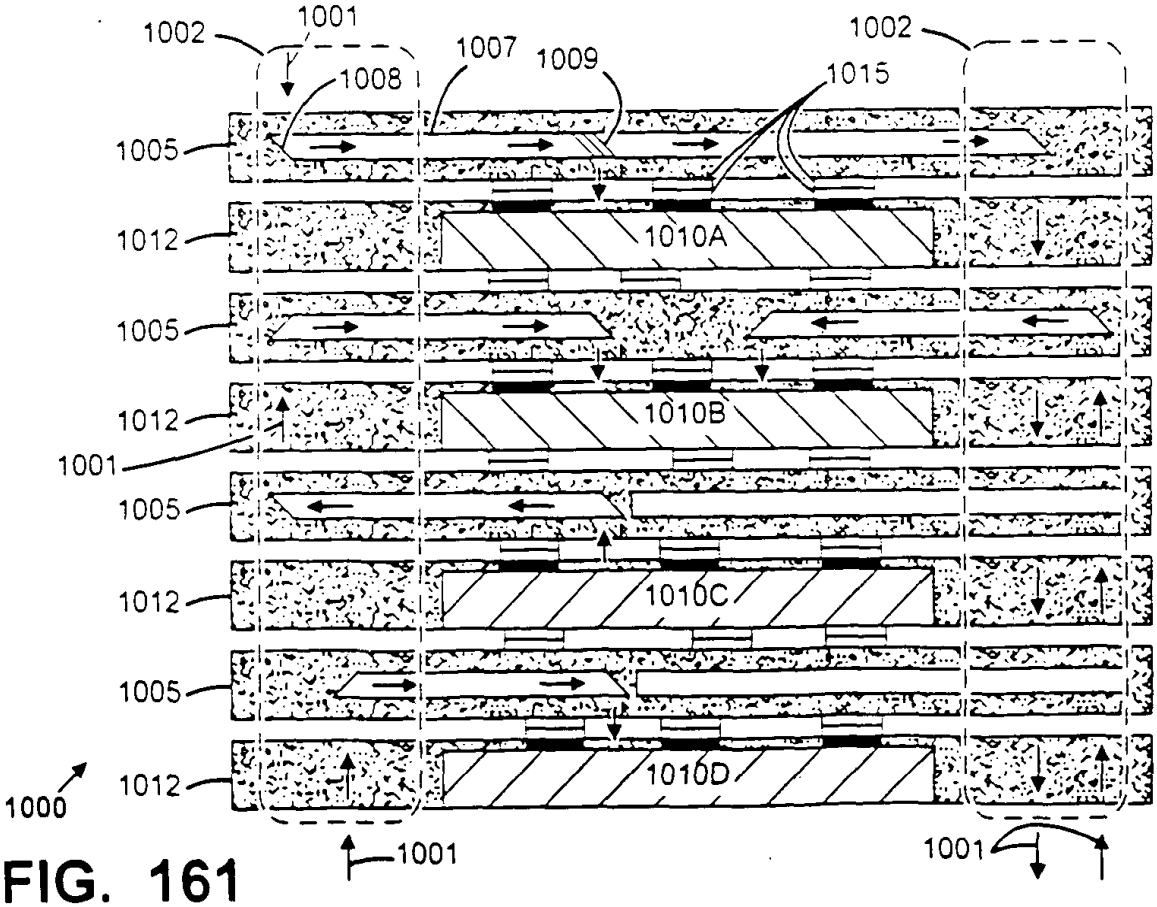


FIG._161

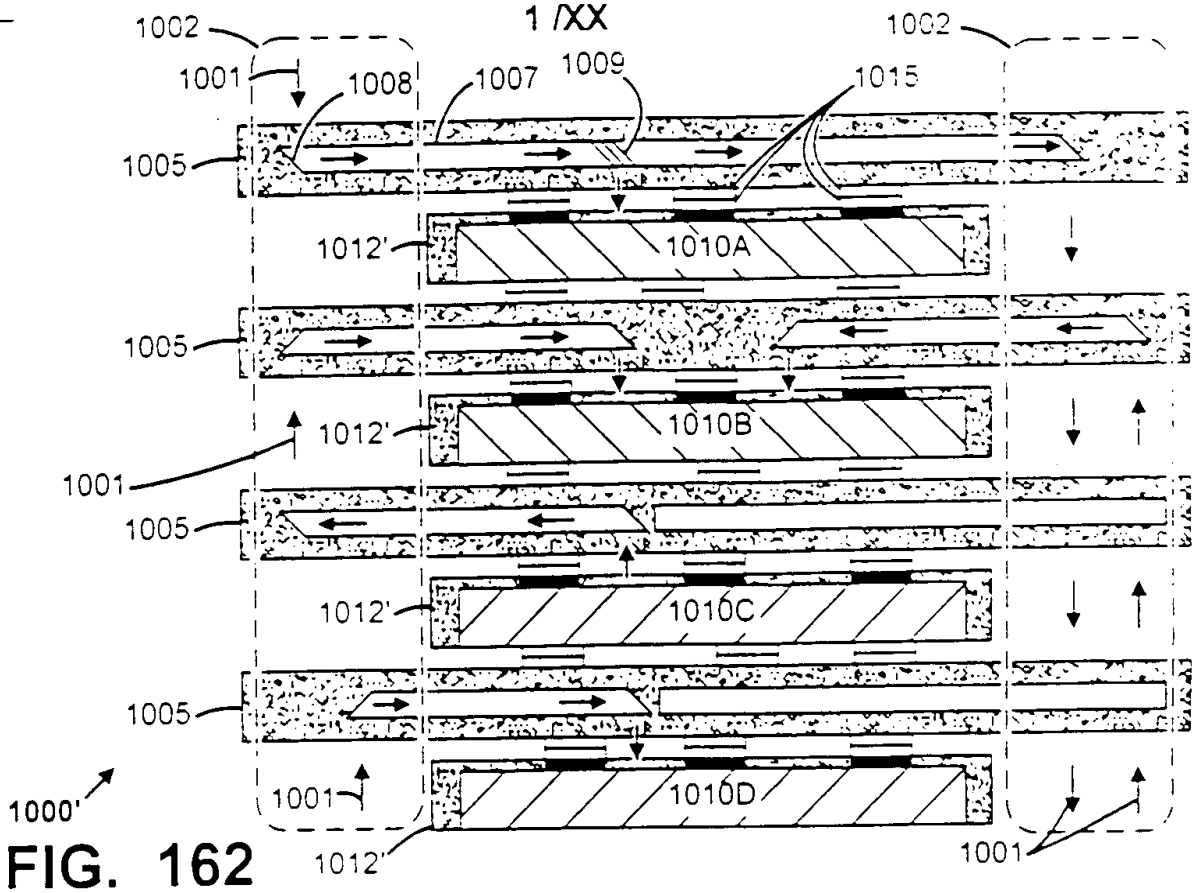


FIG._162

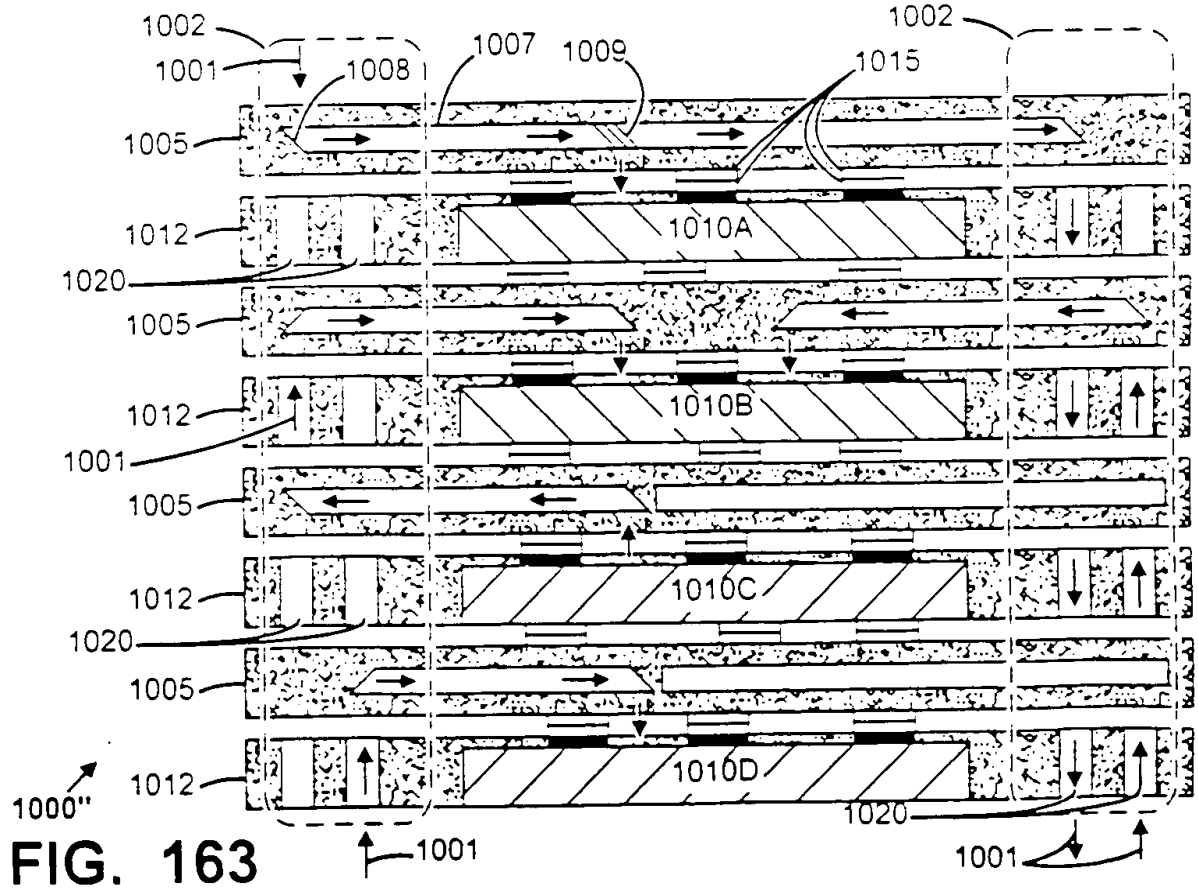


FIG._163

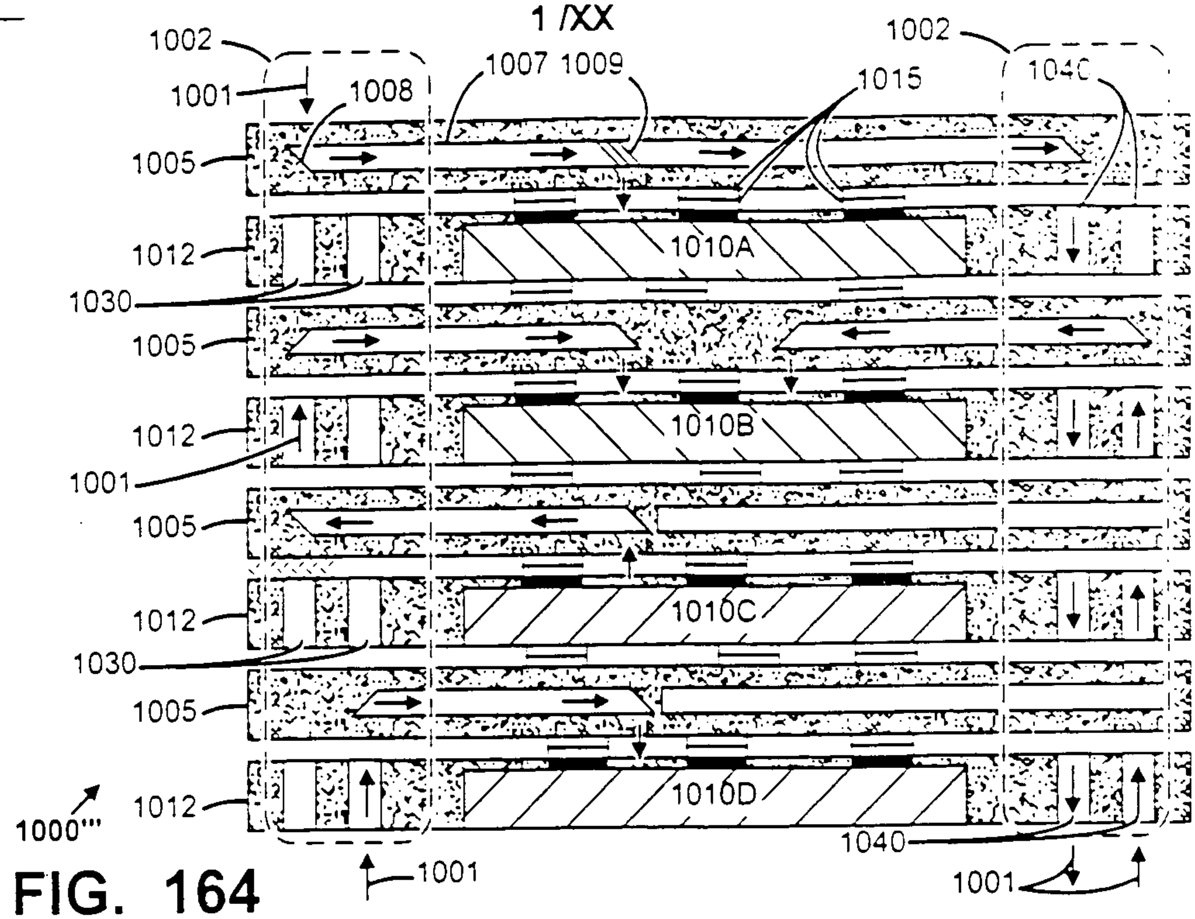


FIG._164

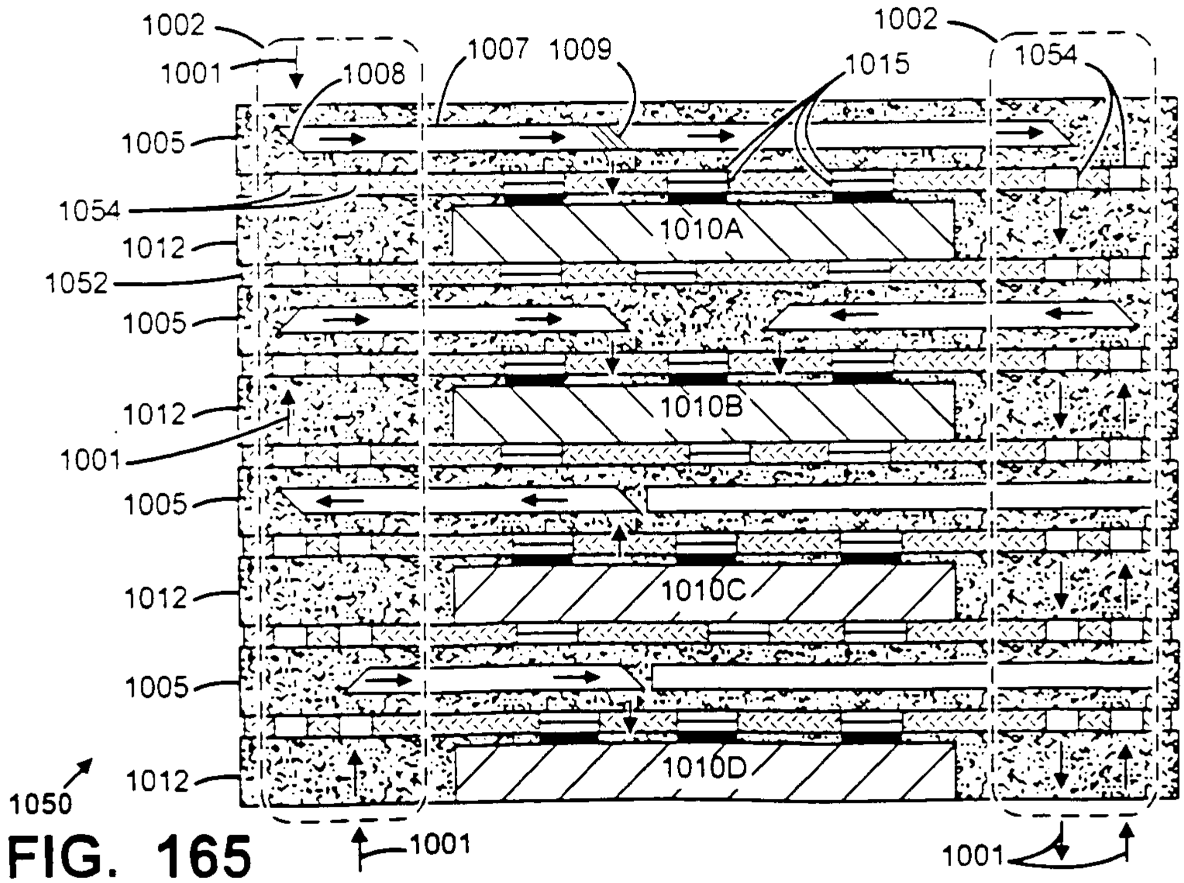


FIG._165

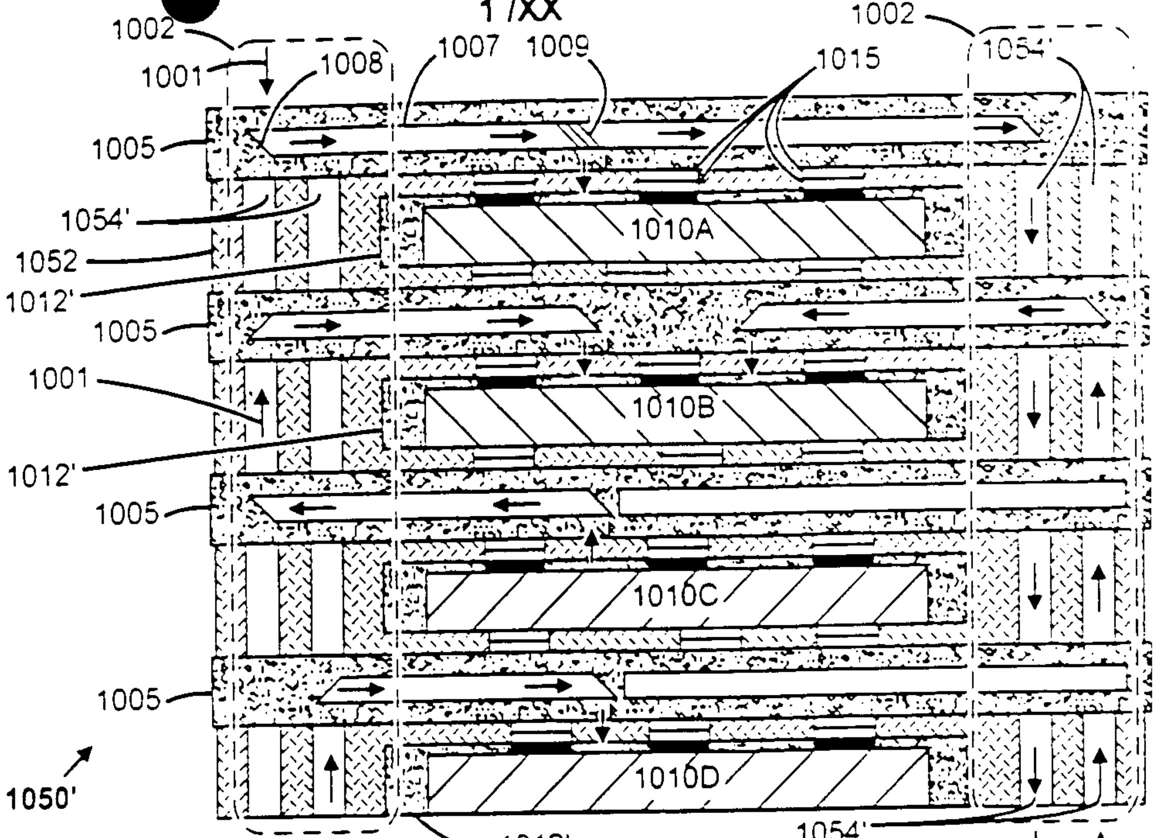


FIG._166

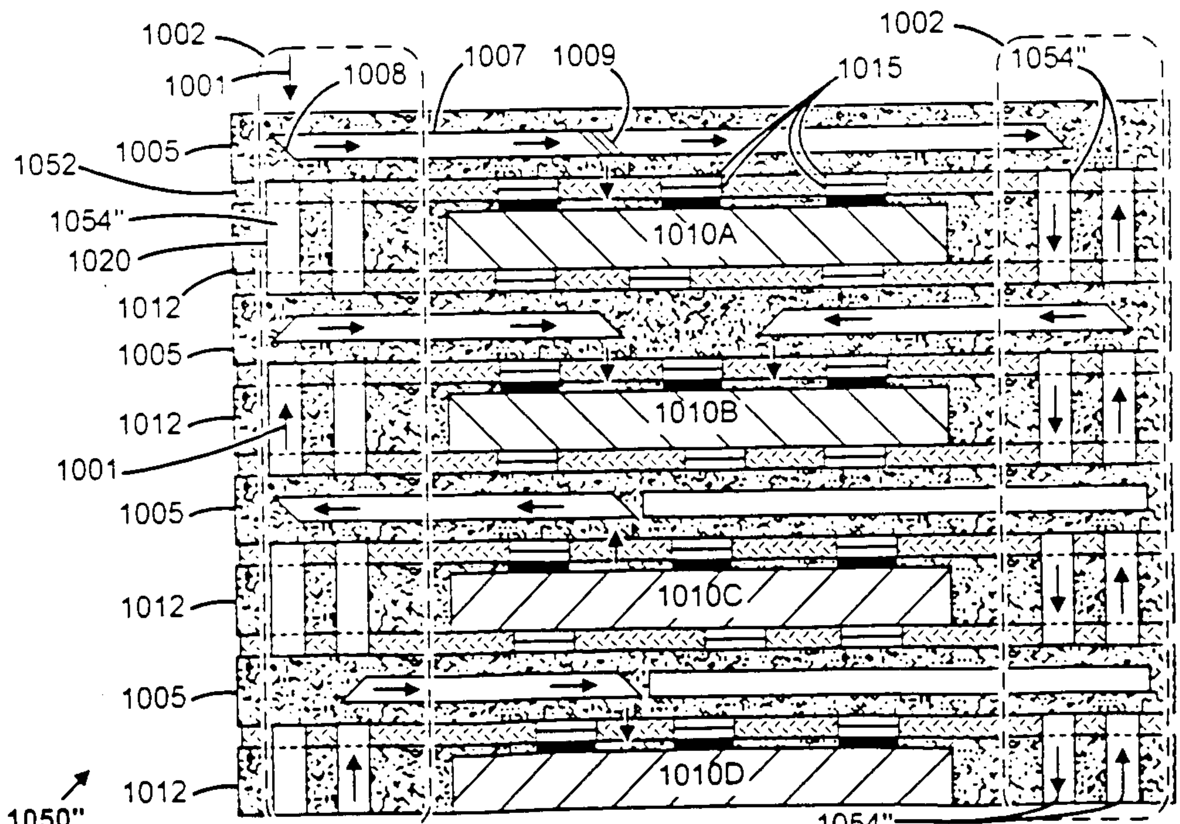


FIG._167

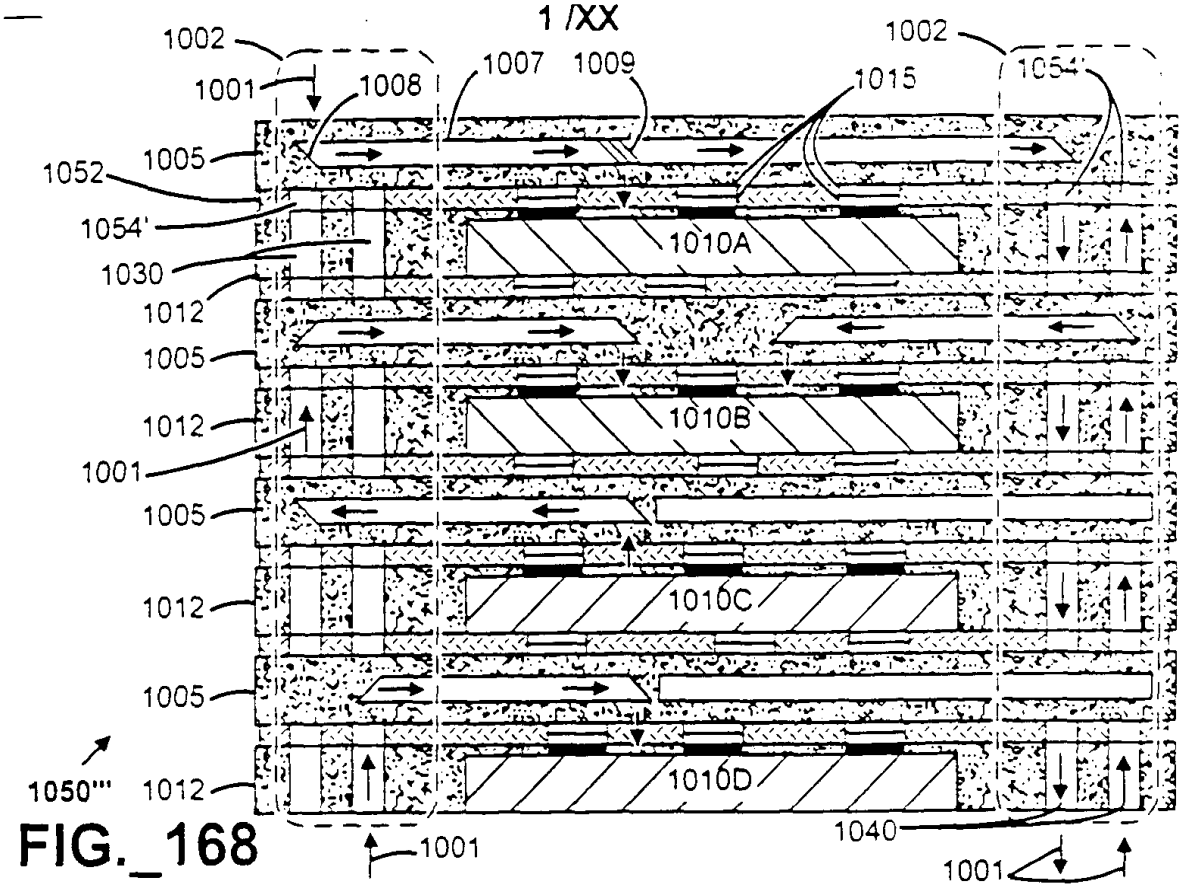


FIG._168

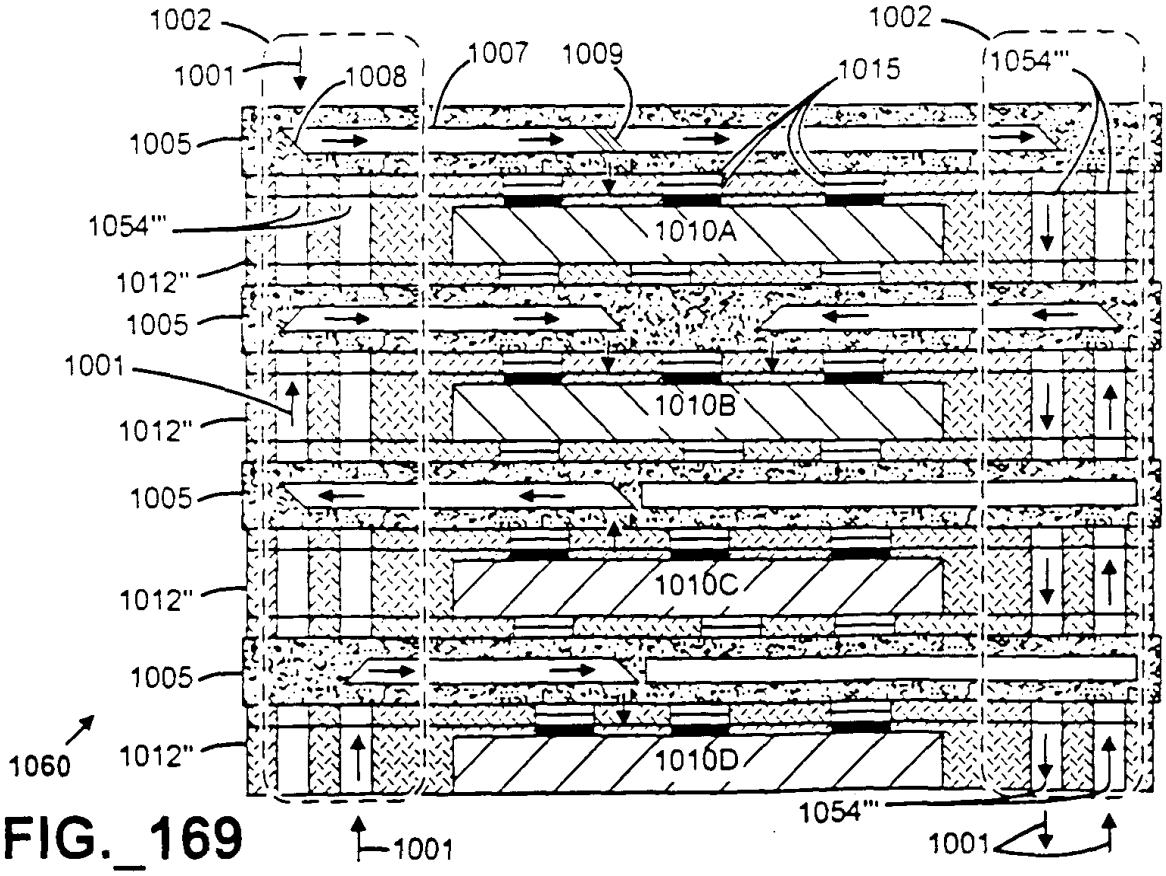


FIG._169

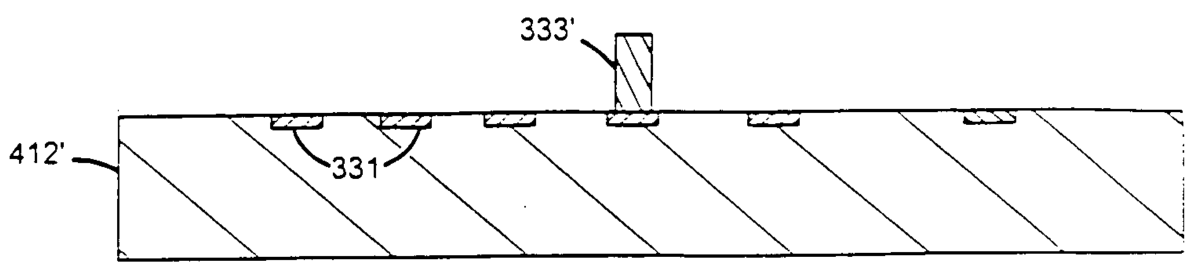


FIG._170

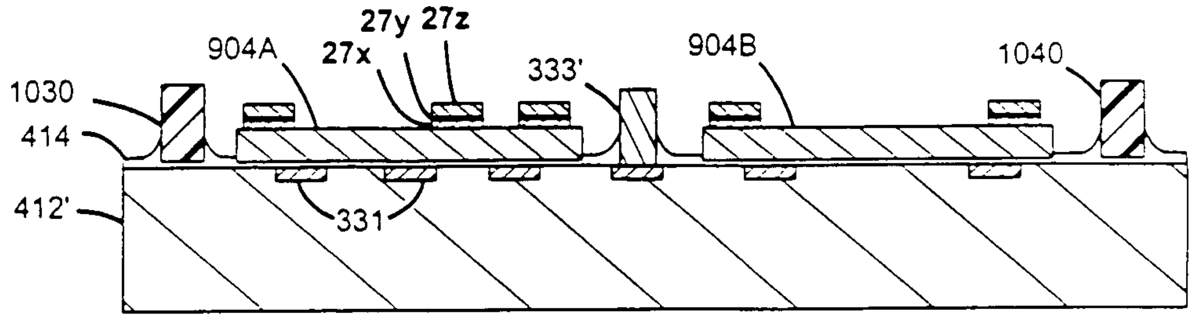


FIG._171

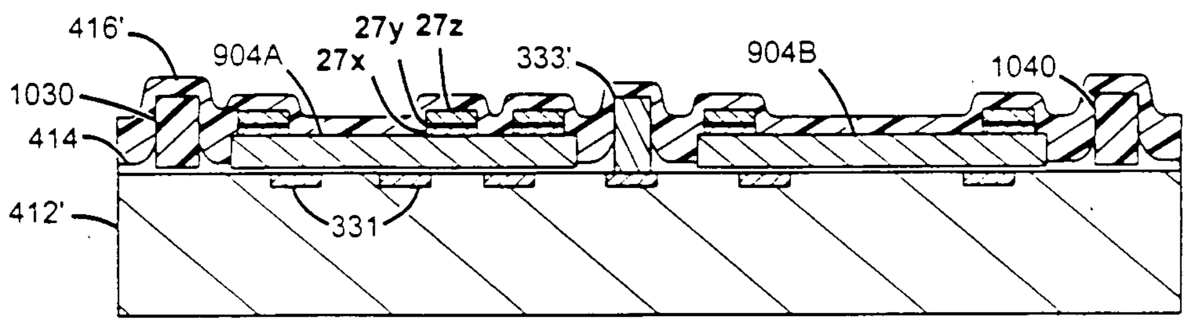


FIG._172

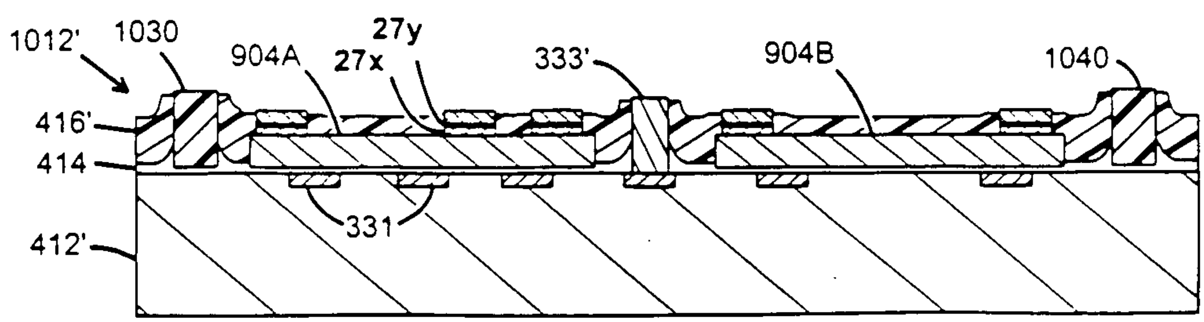


FIG._173

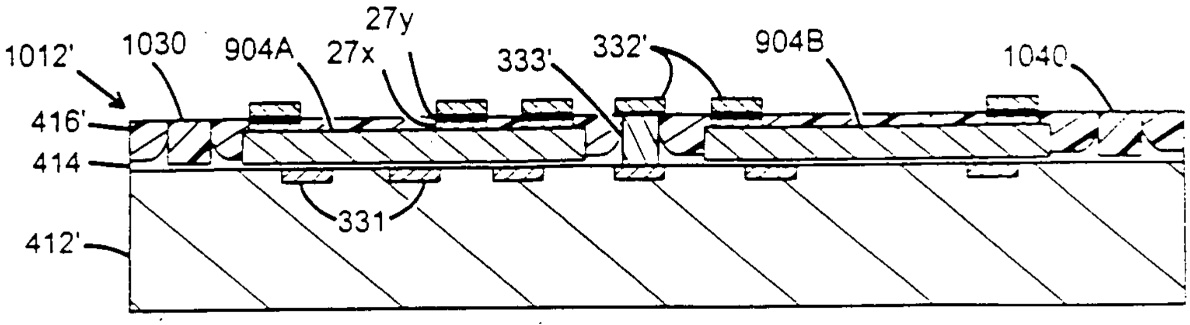


FIG._174

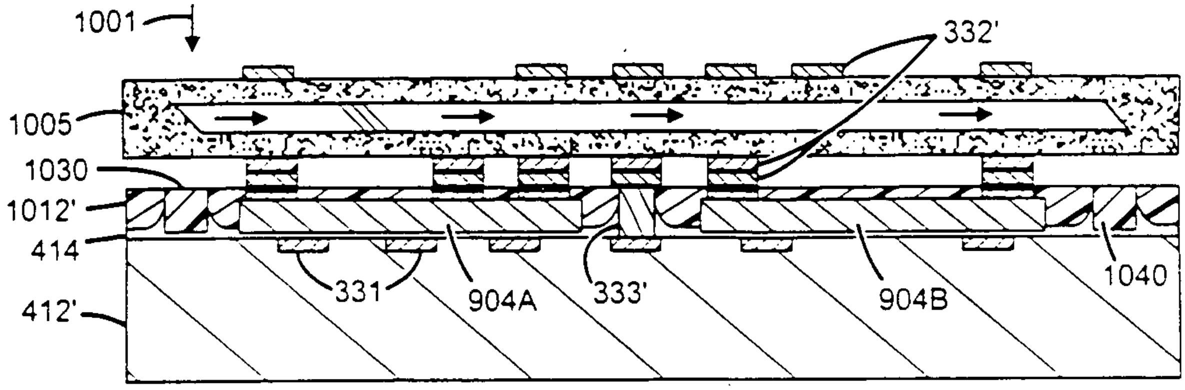


FIG._175

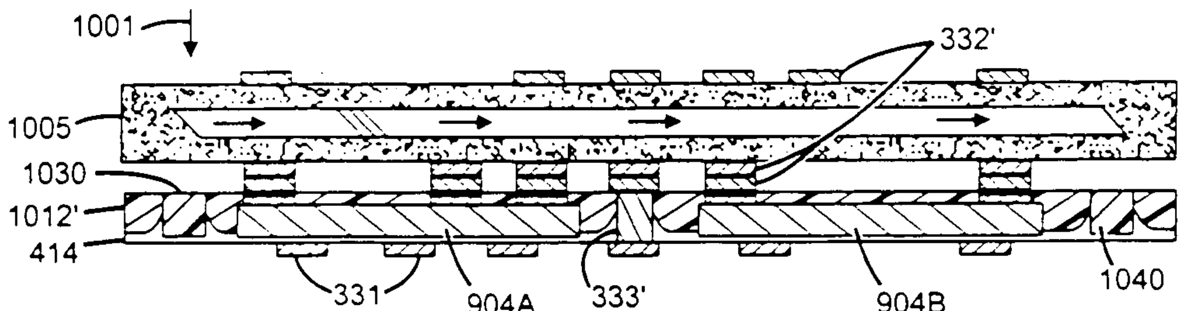


FIG._176

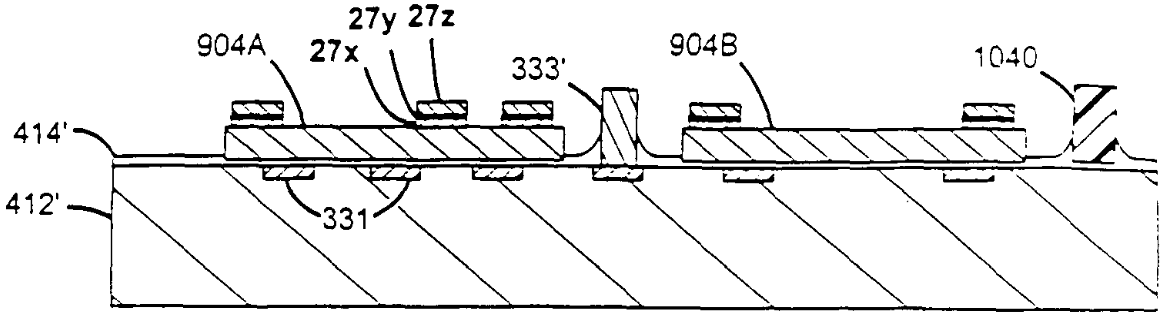


FIG._177

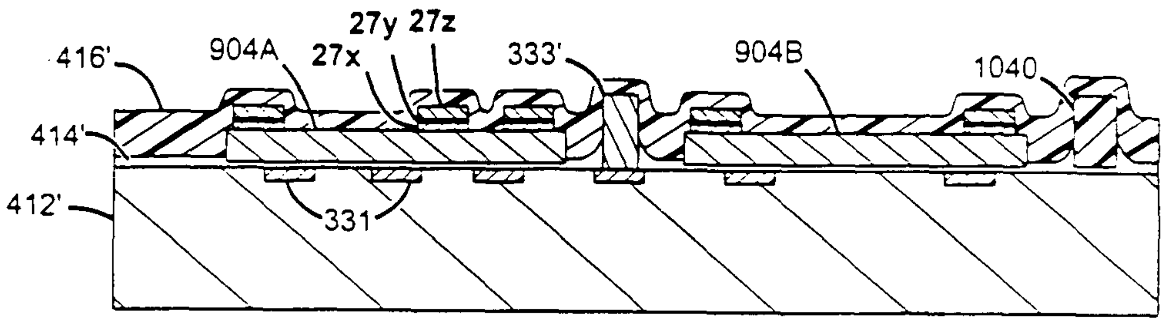


FIG._178

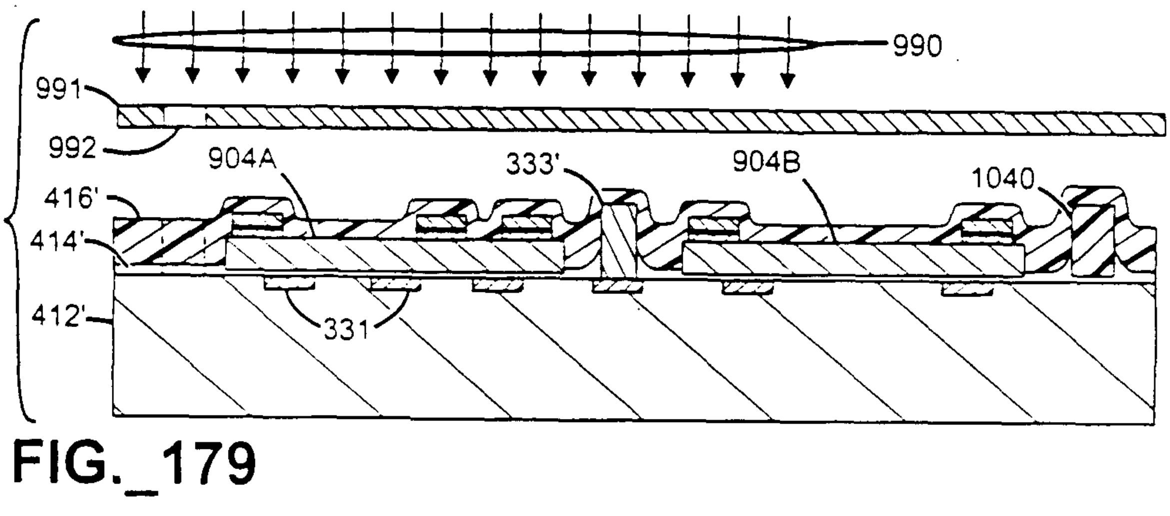


FIG._179

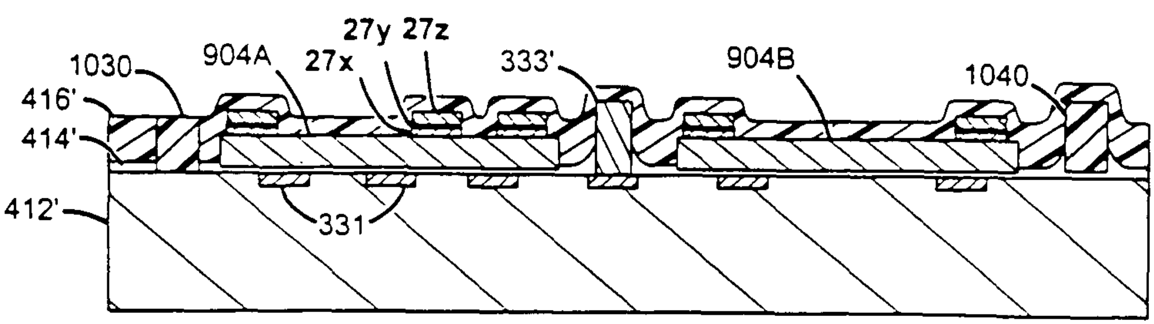


FIG._180

I/O Connection in OE Substrate (Planar Modulator)

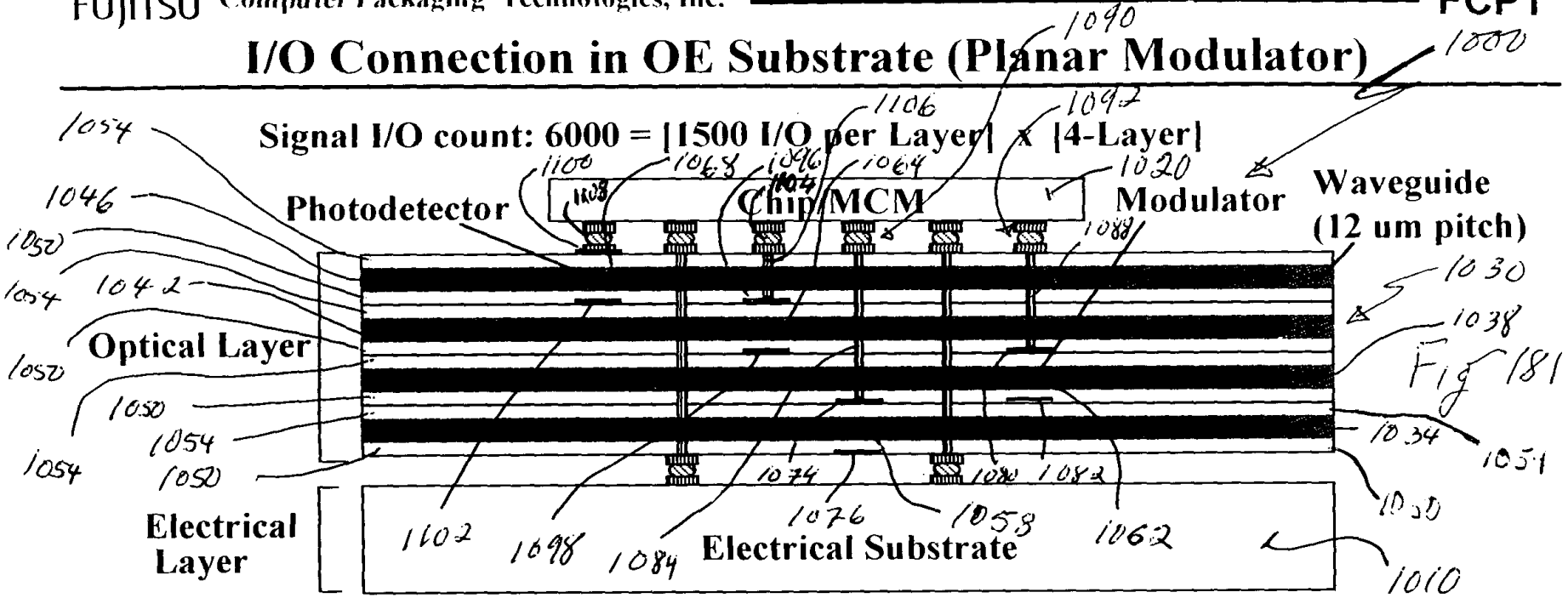


Fig 181

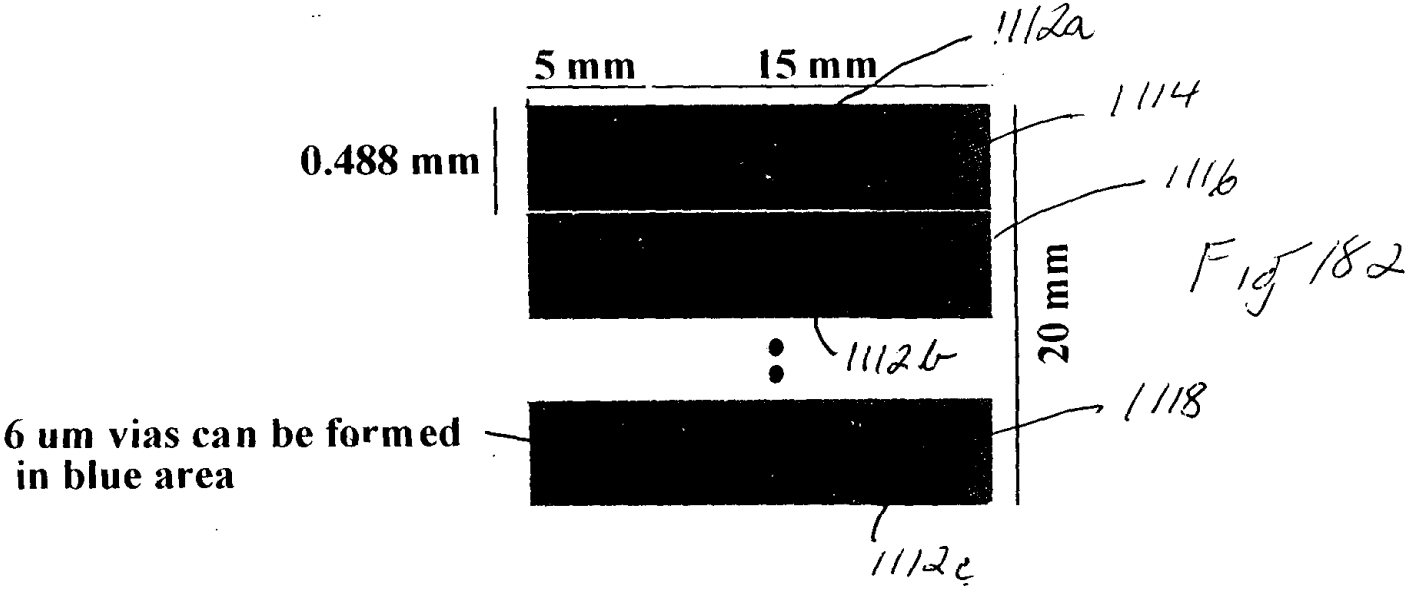
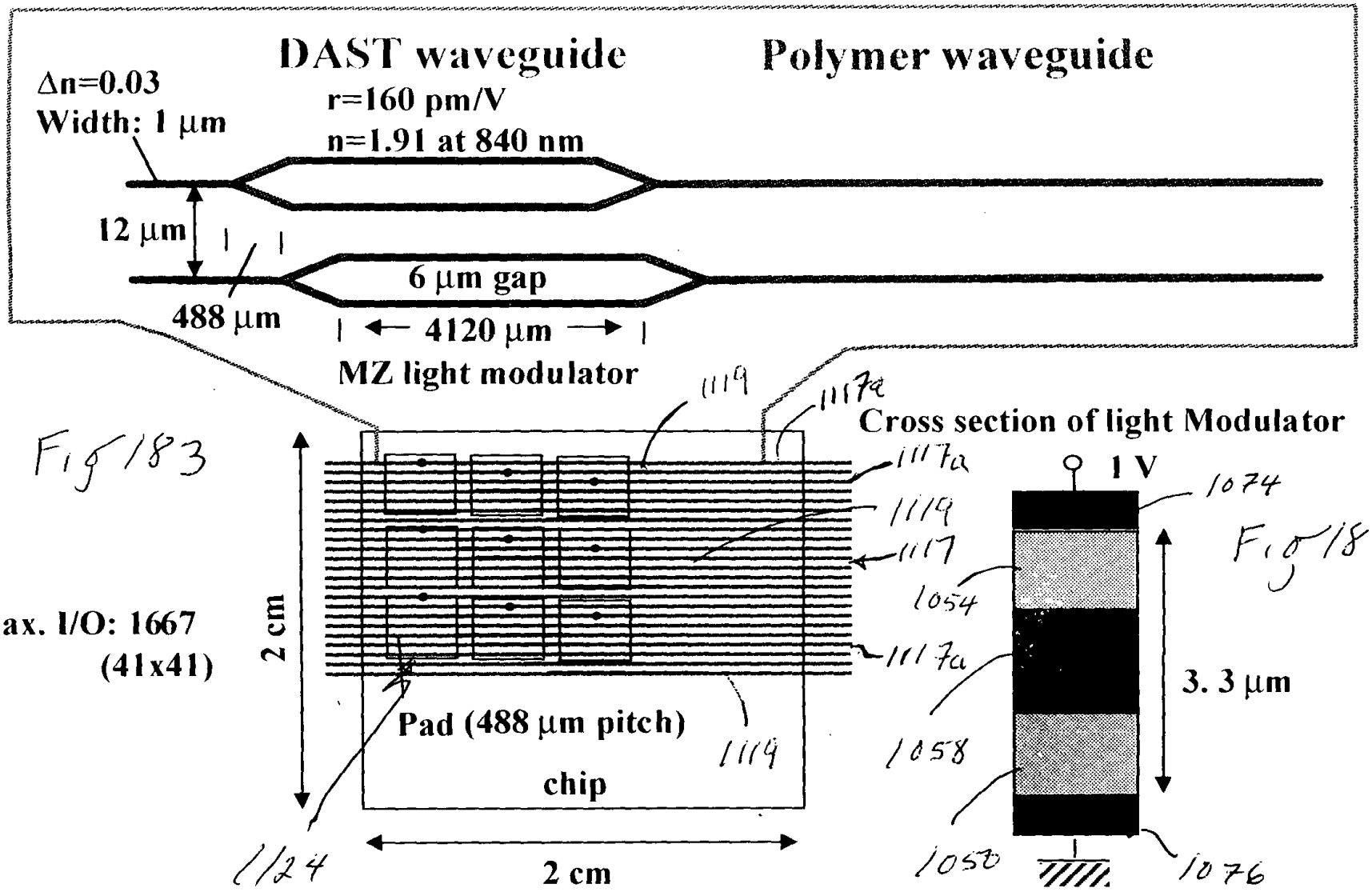


Fig 182

I/O Connection in OE Substrate (Planar Modulator)



FUJITSU Computer Packaging Technologies, Inc. FCPT

I/O Connection in OE Substrate (OE-VLSI)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

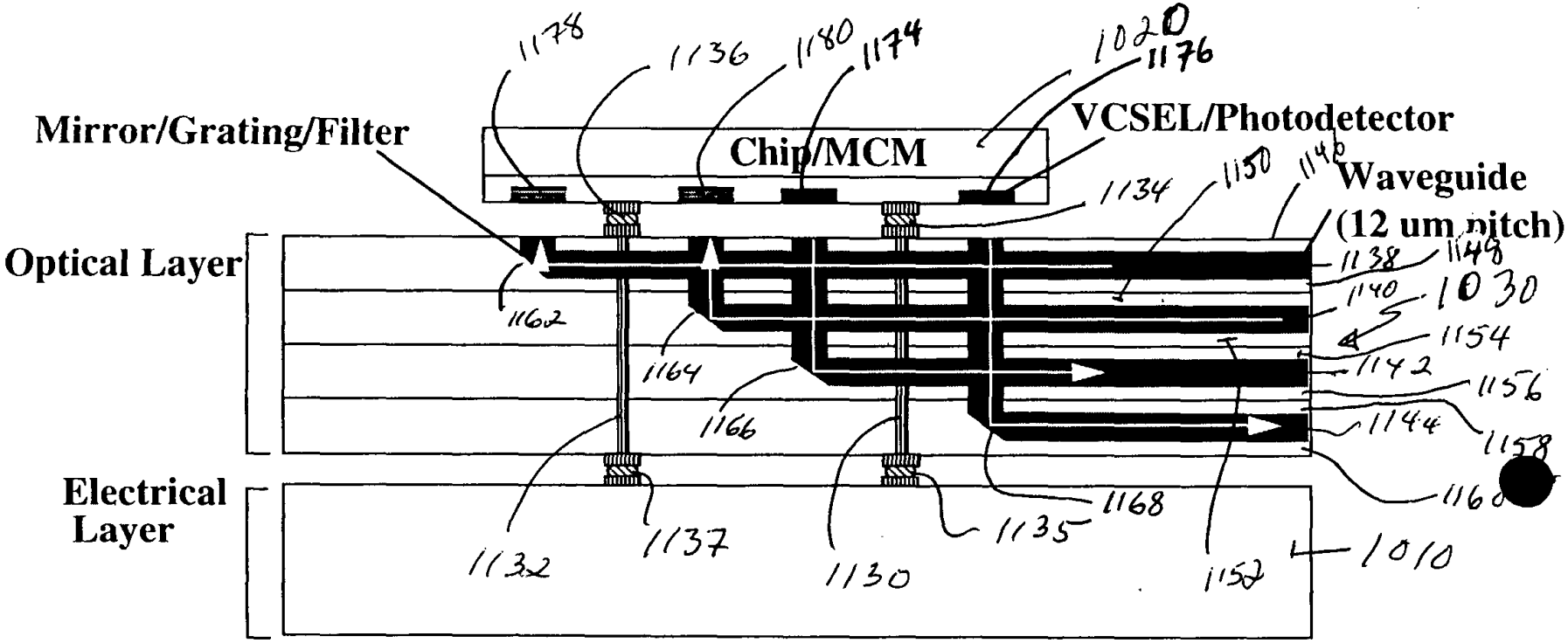


Fig 185

FUJITSU Computer Packaging Technologies, Inc. FCPT

I/O Connection in OE Substrate (OE-VLSI)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

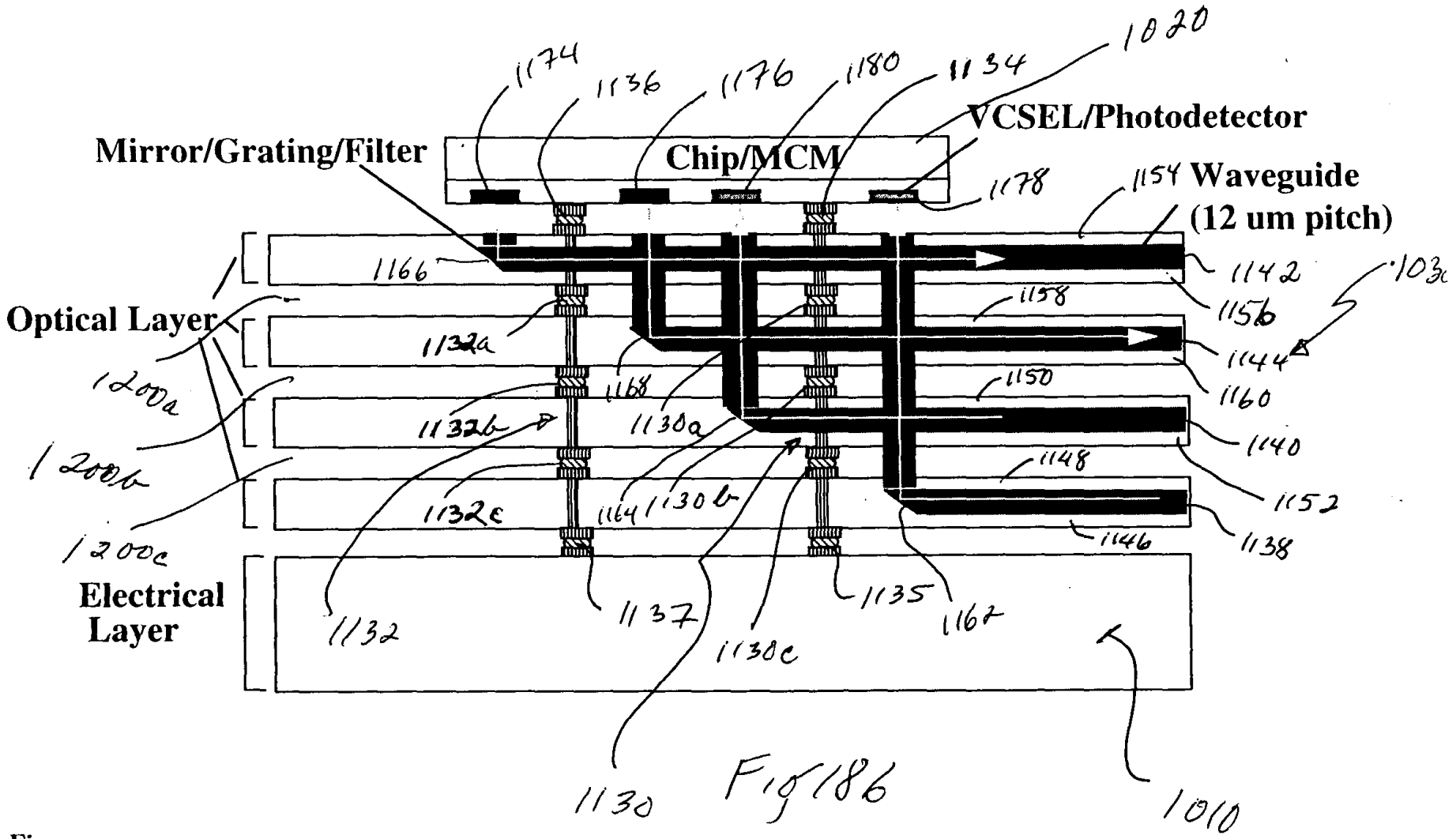


Fig 186

Fig.

FUJITSU Computer Packaging Technologies, Inc. FCPT

I/O Connection in OE Substrate (OE-VLSI, WDM)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

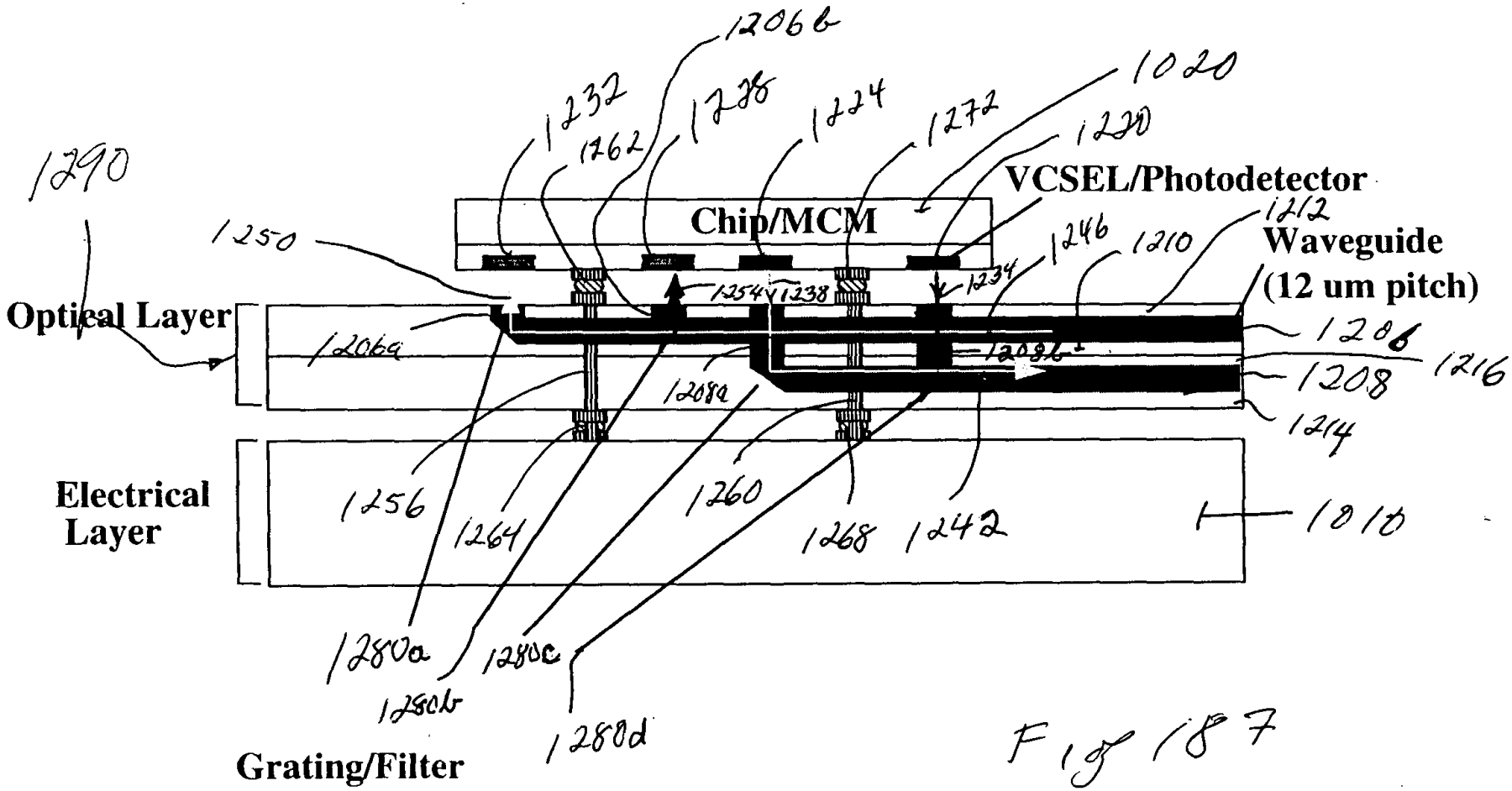


Fig 187

I/O Connection in OE Substrate (OE-VLSI, WDM)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

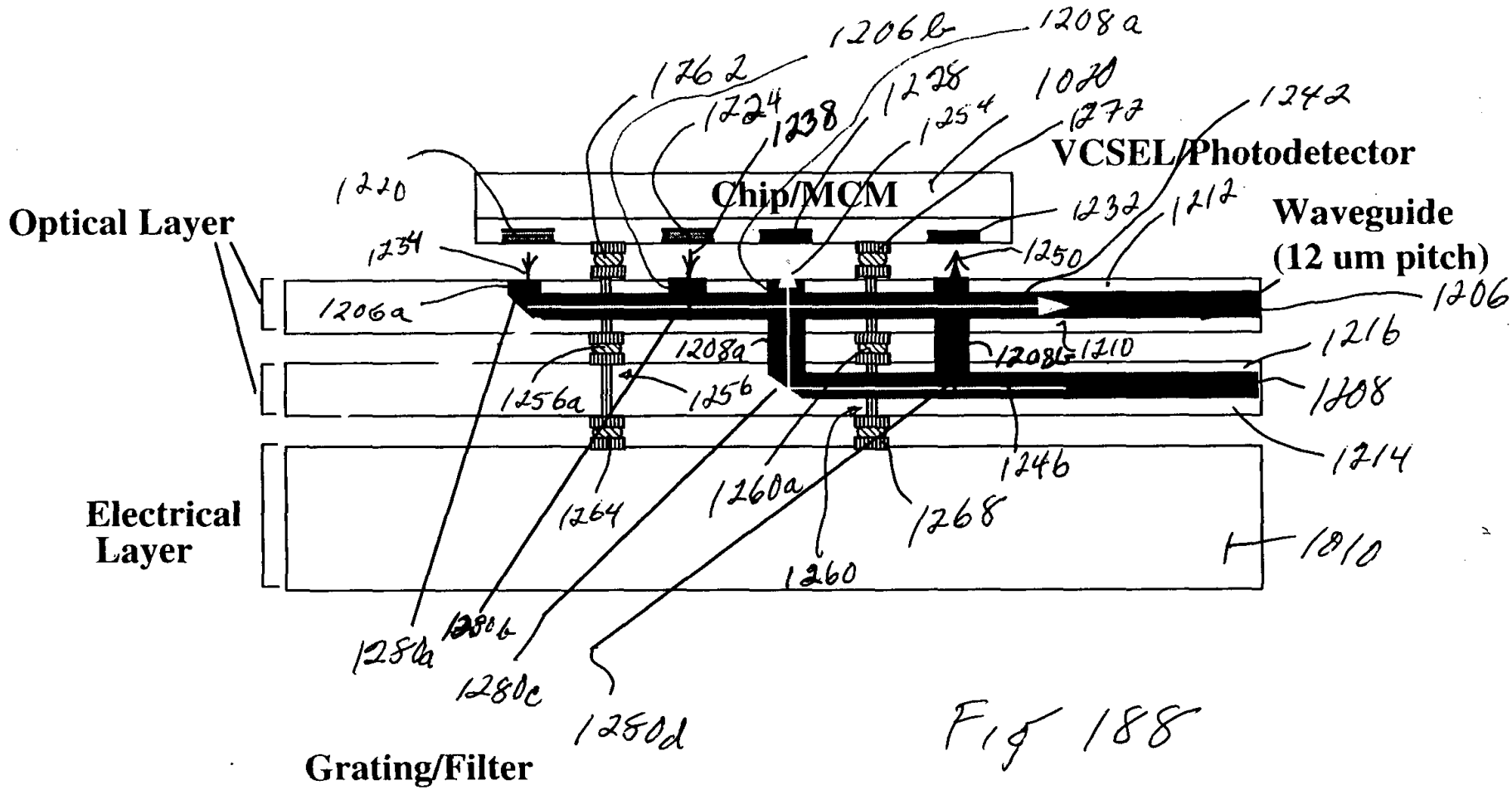


Fig 188

I/O Connection in OE Substrate (Active OE Layer)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

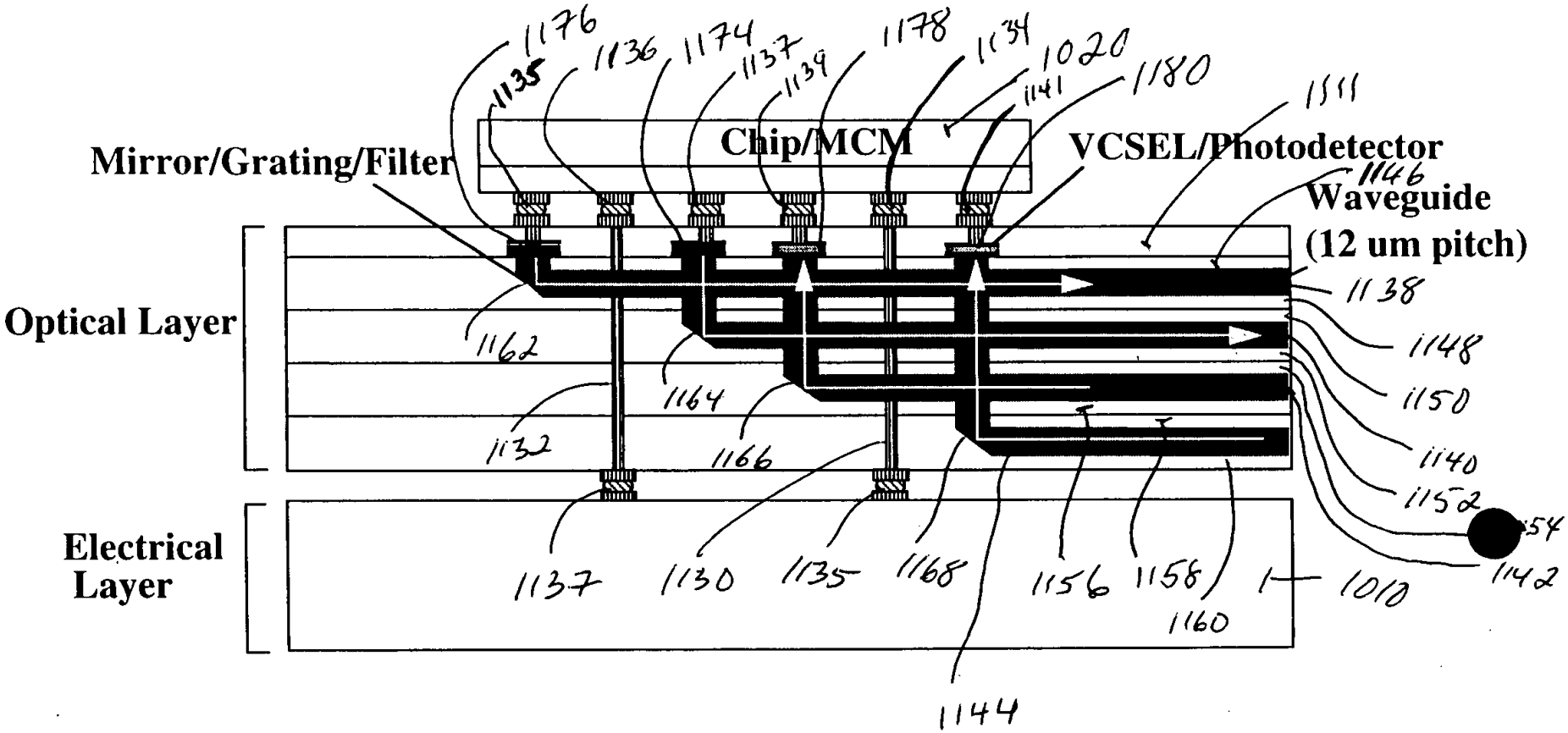


Fig 189

FUJITSU Computer Packaging Technologies, Inc. FCPT

I/O Connection in OE Substrate (Active OE Layer)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

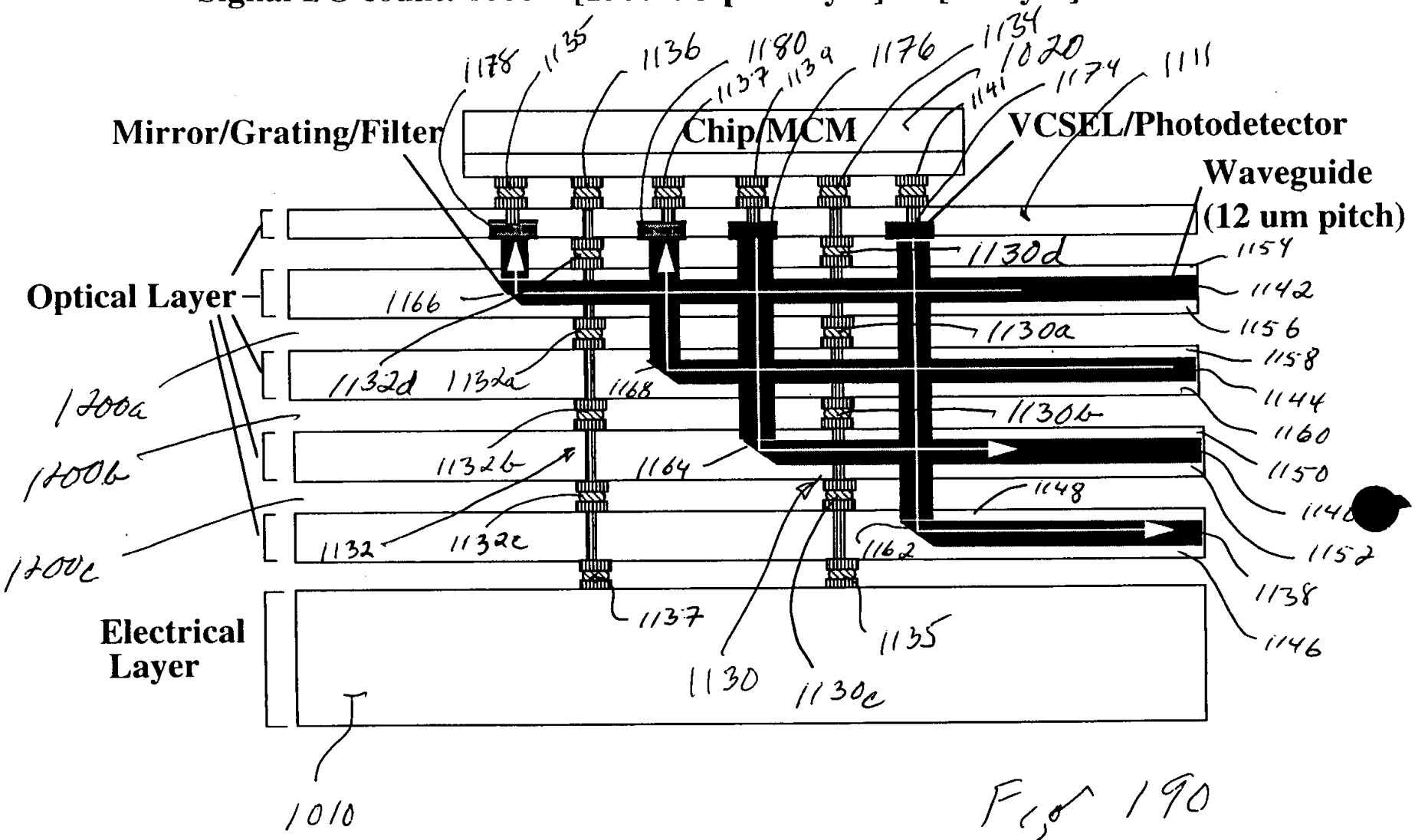


Fig. 9

FUJITSU Computer Packaging Technologies, Inc. FCPT

I/O Connection in OE Substrate (Active OE Layer , WDM)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

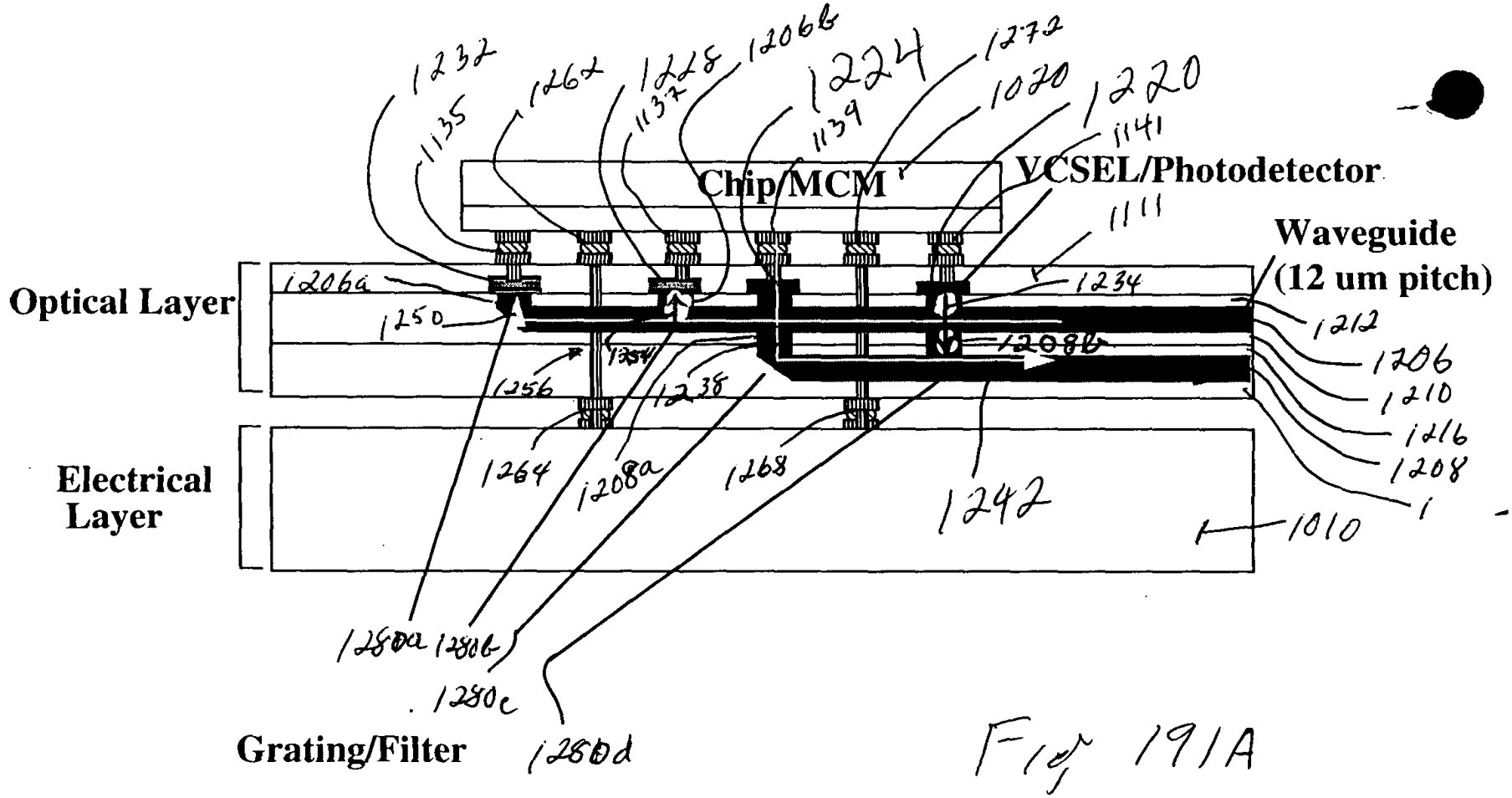


Fig 19A

Fig. 10

FUJITSU Computer Packaging Technologies, Inc. FCPT

I/O Connection in OE Substrate (Active OE Layer , WDM)

Signal I/O count: 6000 = [1500 I/O per Layer] x [4-Layer]

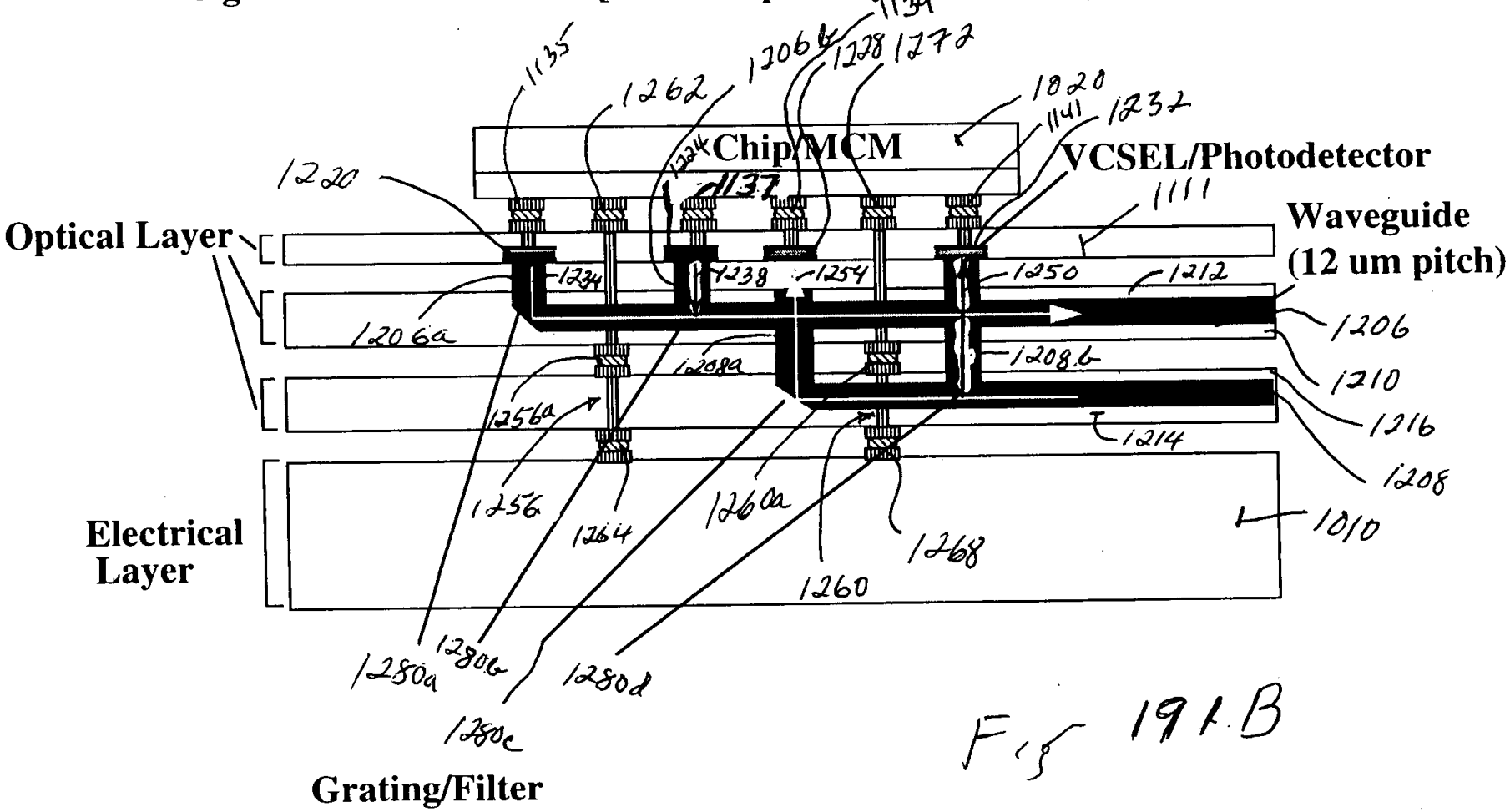


Fig 11B

Fig. 11

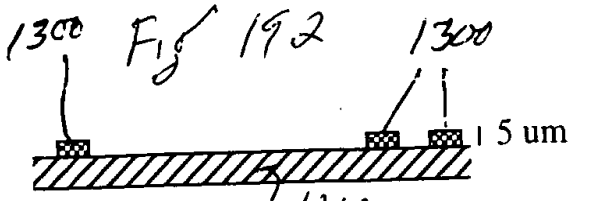


Fig 192

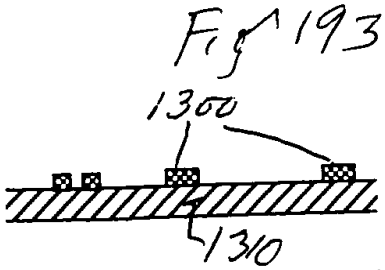


Fig 193

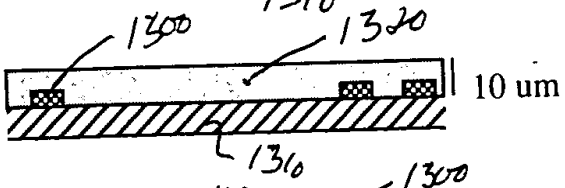


Fig 194

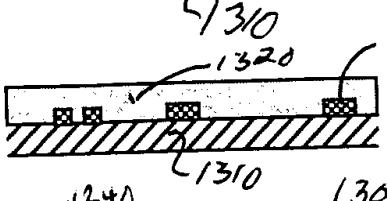


Fig 195

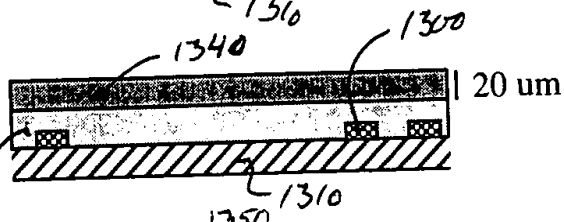


Fig 196

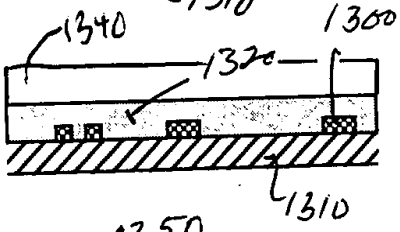


Fig 197

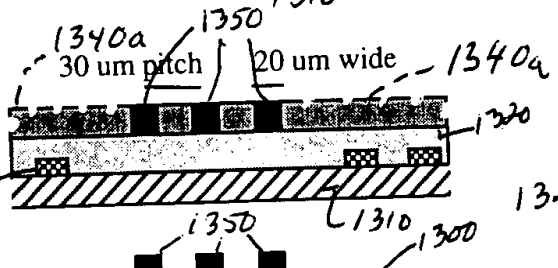


Fig 198

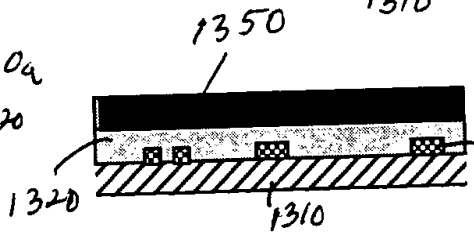


Fig 199

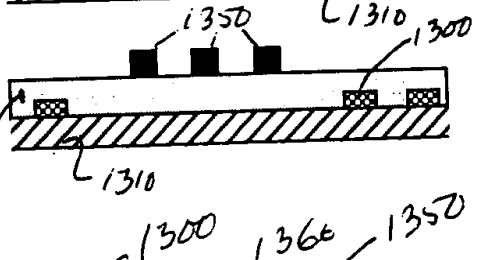


Fig 200

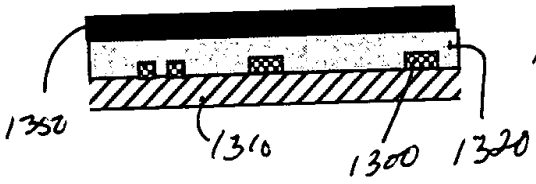


Fig 201

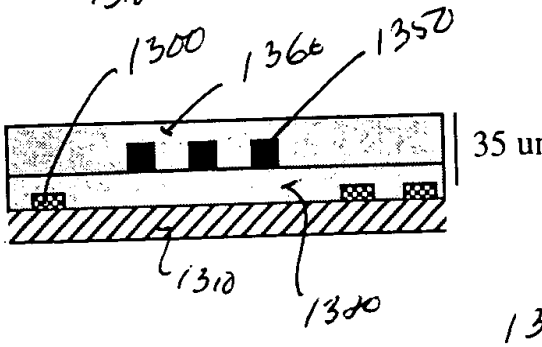


Fig 202

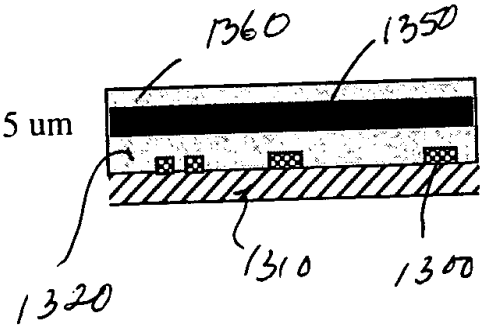


Fig 203

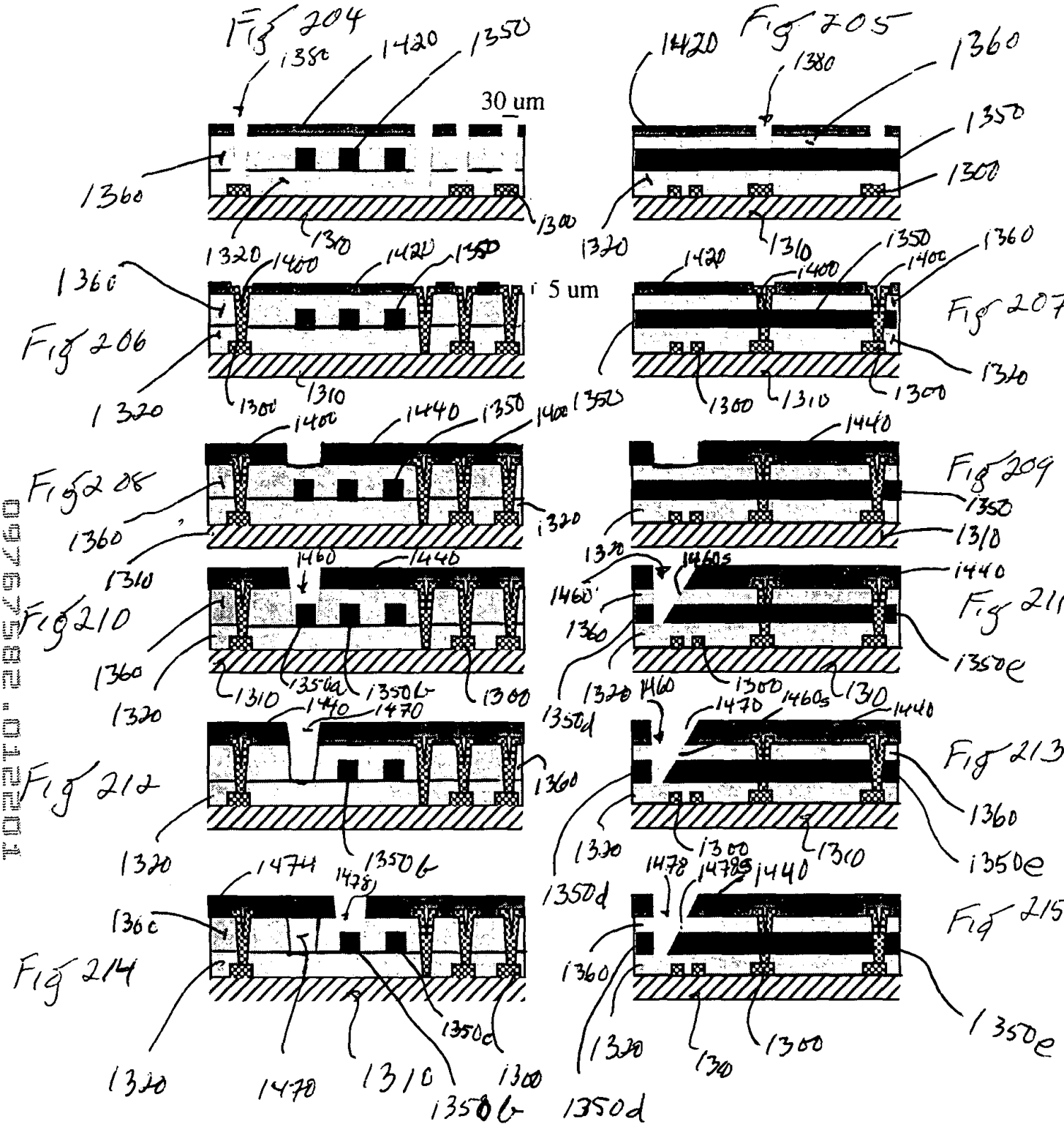


Fig 204
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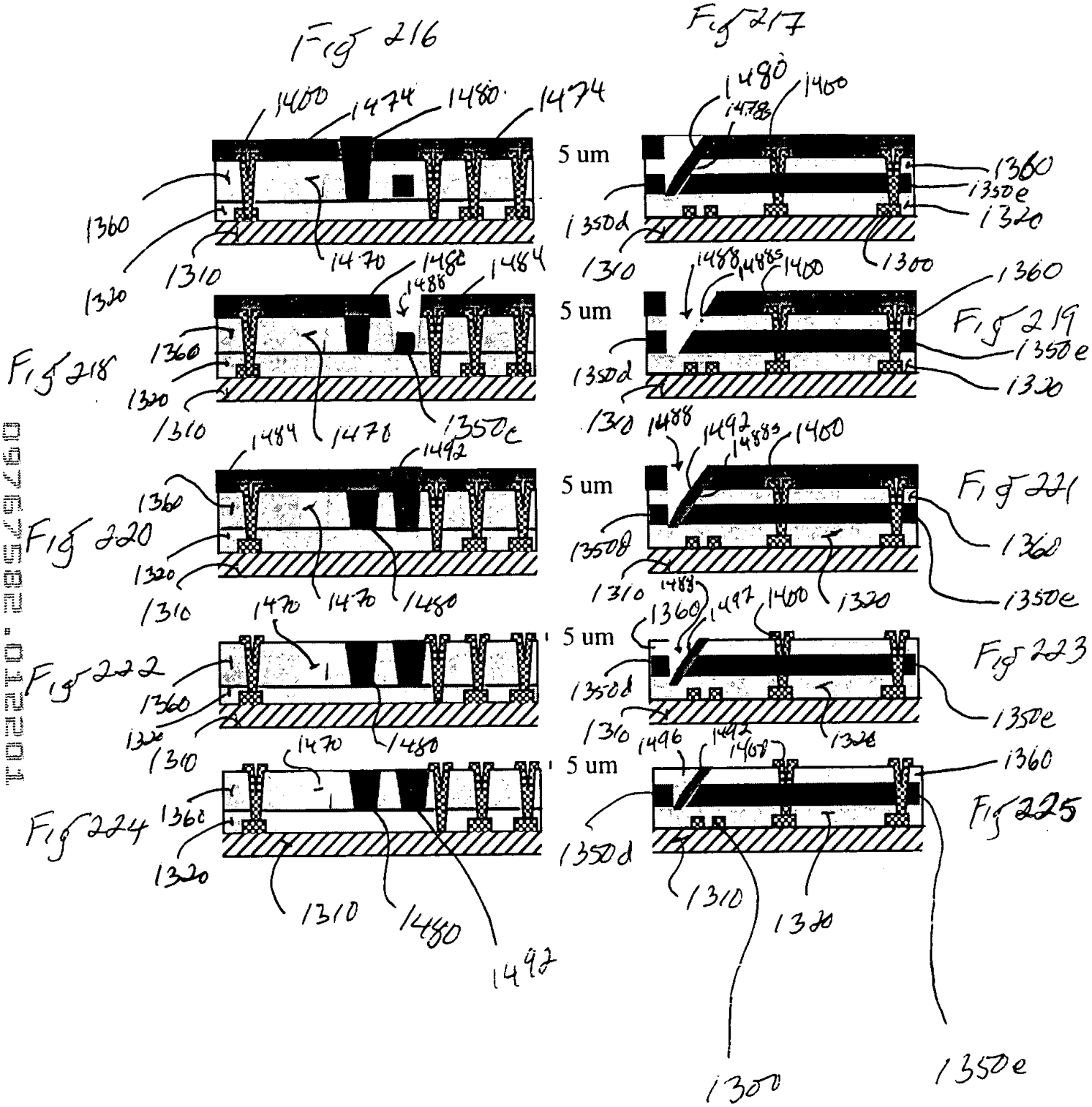
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Fig 226

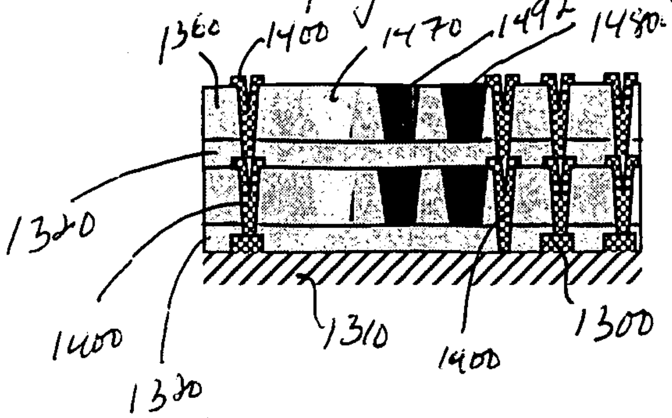


Fig 227

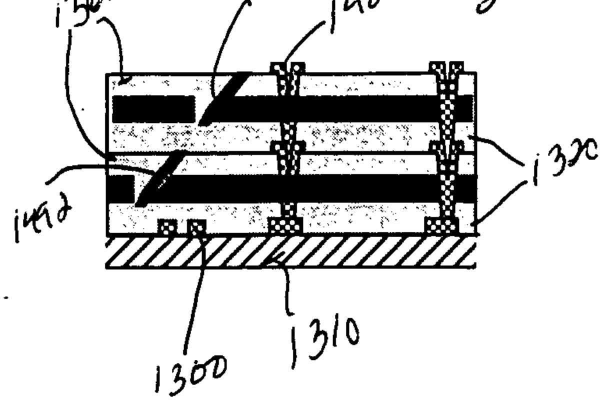


Fig 228

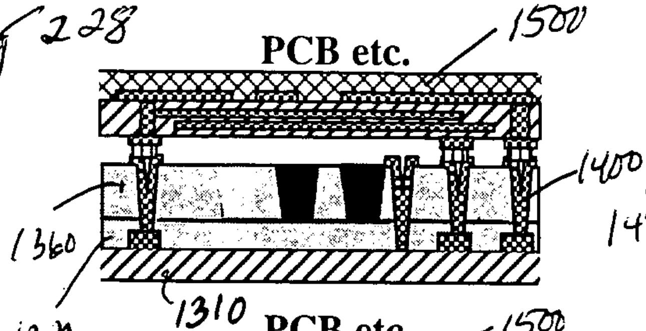


Fig 229

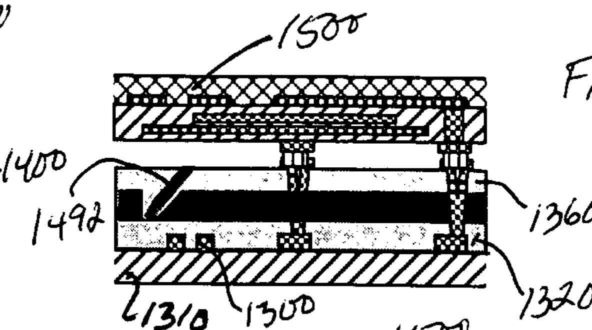


Fig 230

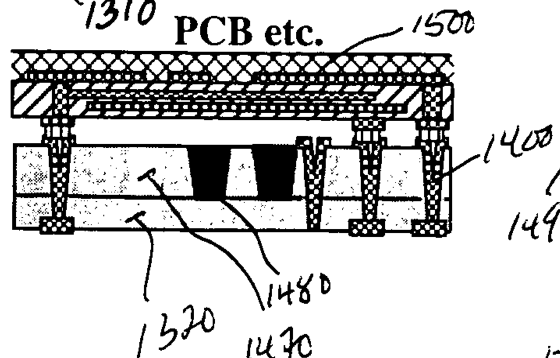


Fig 231

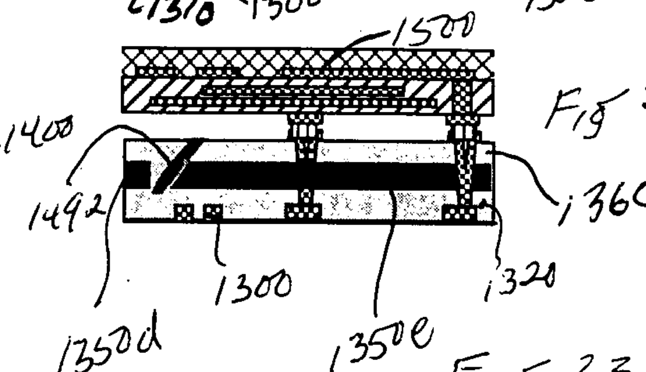


Fig 232

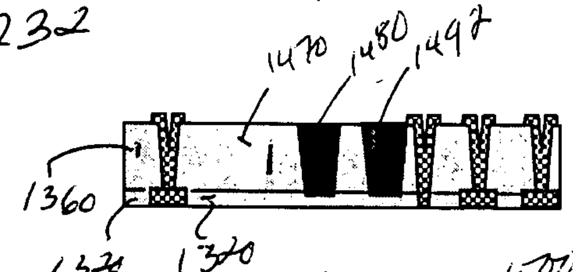


Fig 233

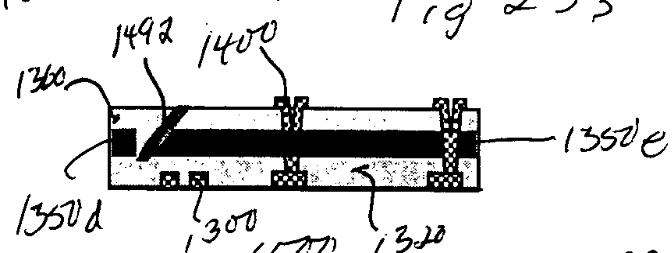


Fig 234

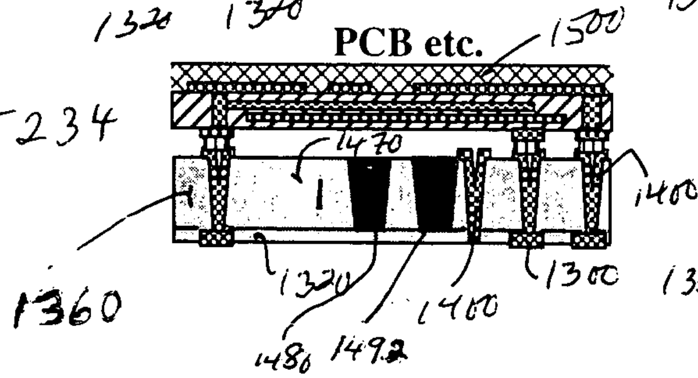


Fig 235

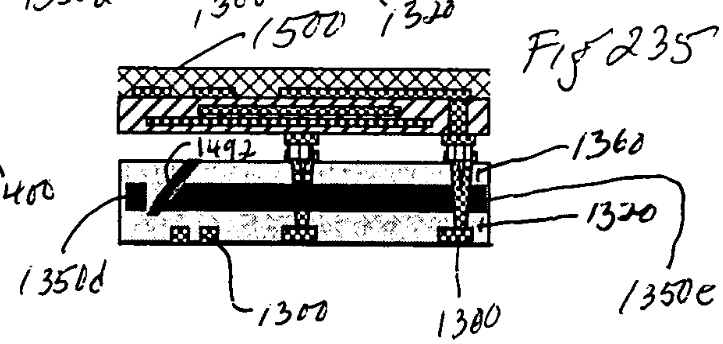


Fig 236

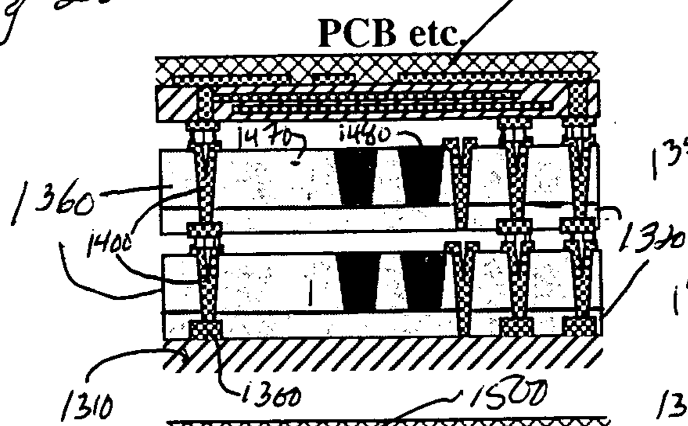


Fig 237

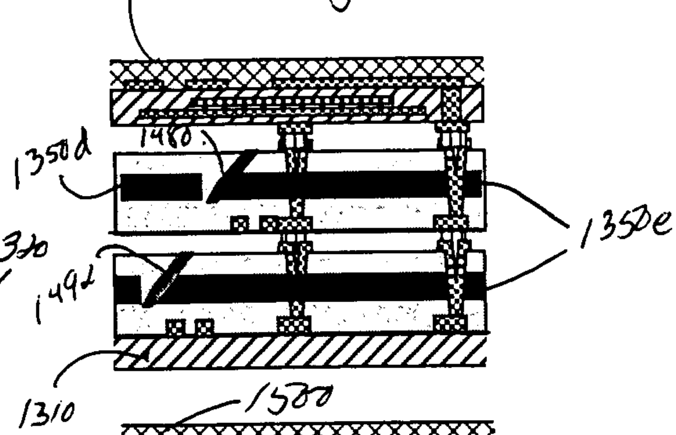


Fig 238

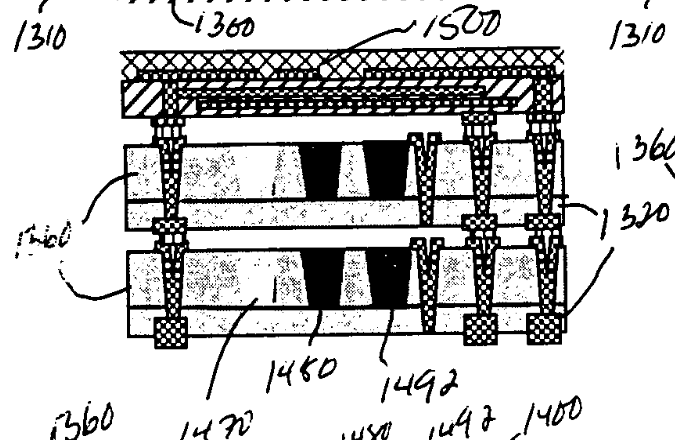


Fig 239

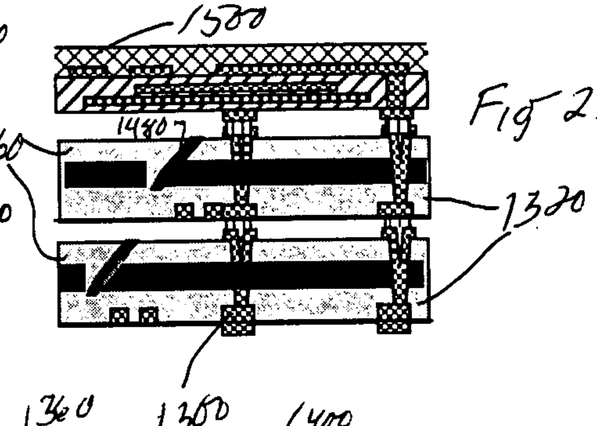


Fig 240

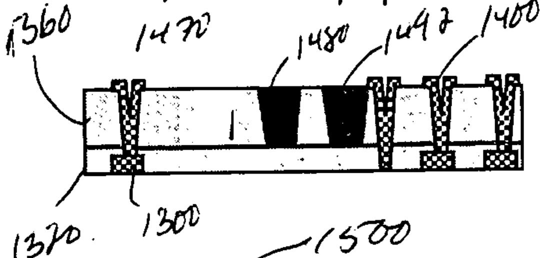


Fig 241

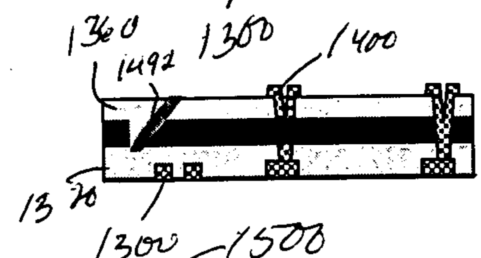


Fig 242

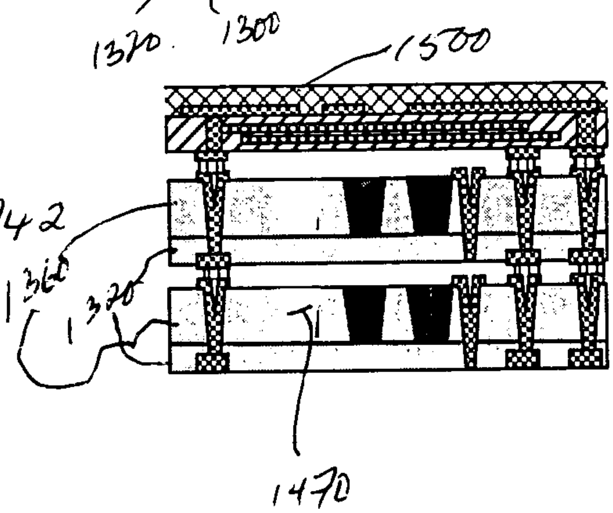


Fig 243

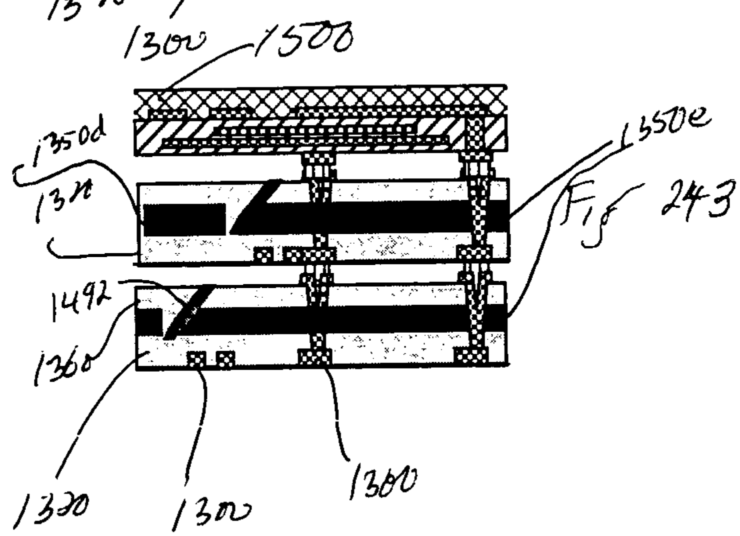


Fig 244

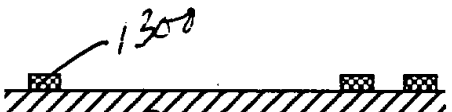


Fig 245

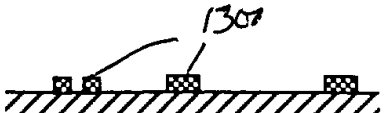


Fig 246

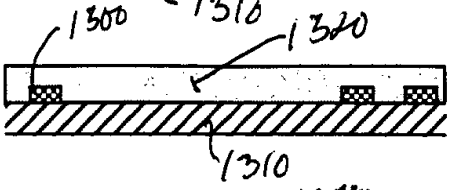


Fig 247

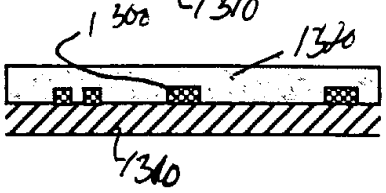


Fig 248

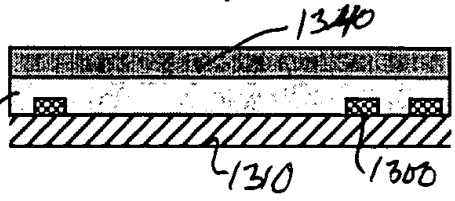


Fig 249

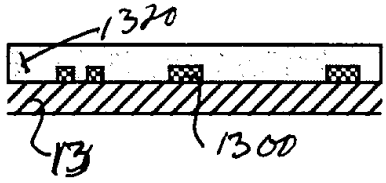


Fig 250

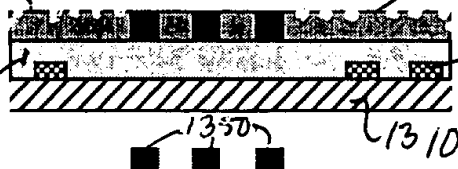


Fig 251

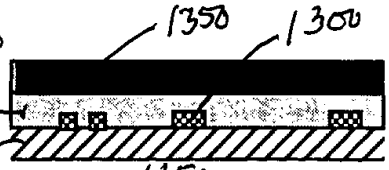


Fig 252

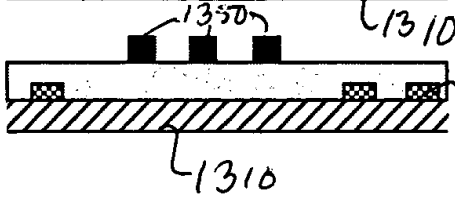


Fig 253

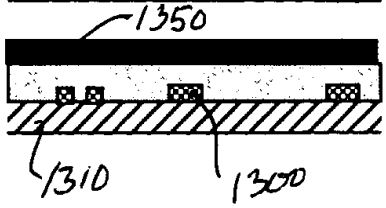


Fig 254

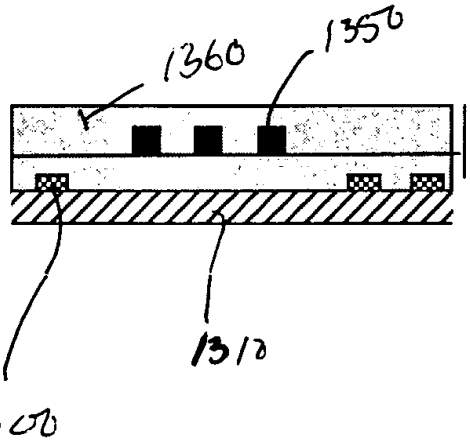
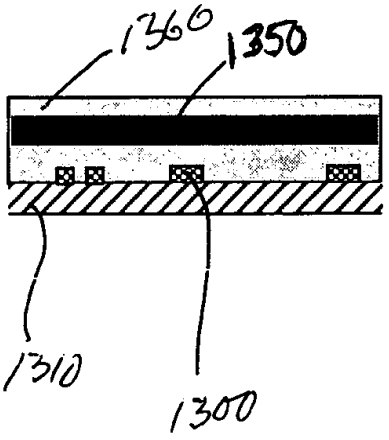


Fig 255



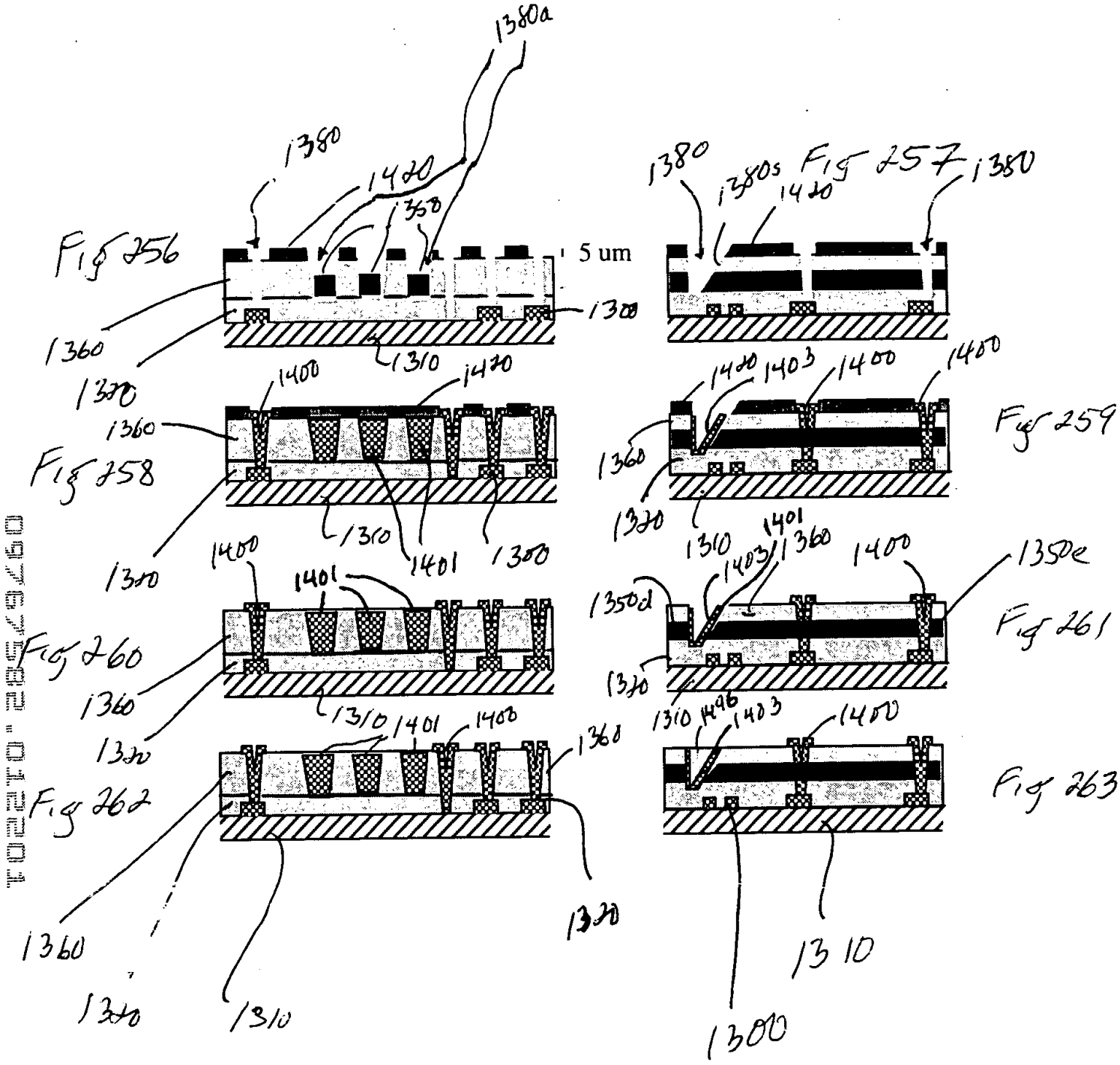

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Fig 256
Fig 257
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Fig 259
Fig 260
Fig 261
Fig 262
Fig 263

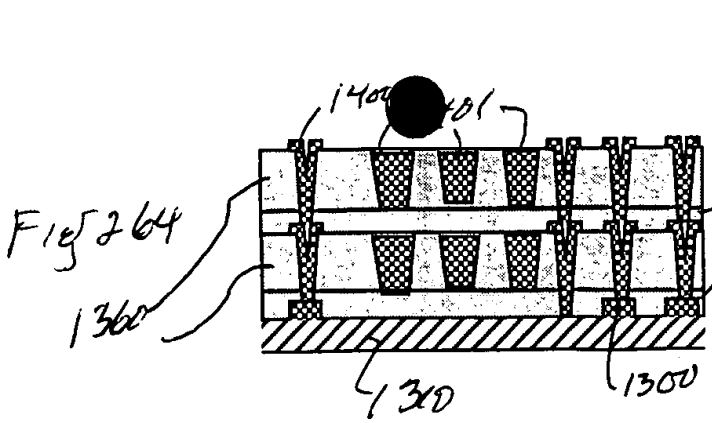


Fig 264

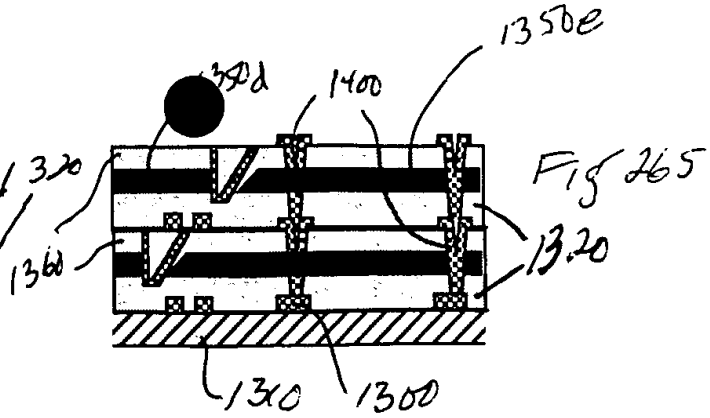


Fig 265

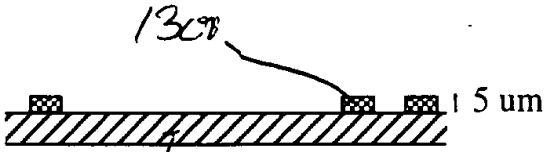


Fig 266

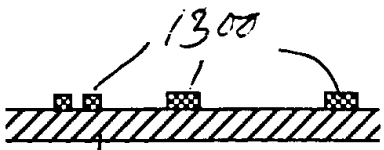


Fig 267

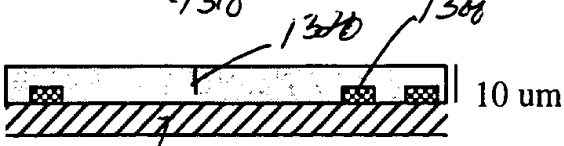


Fig 268

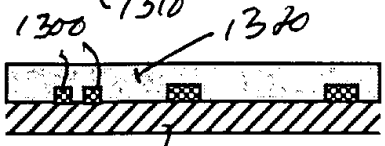


Fig 269

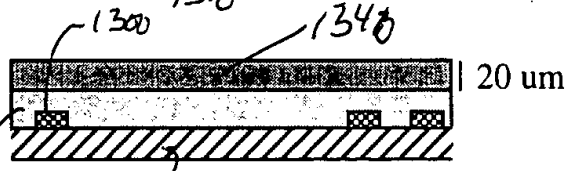


Fig 270

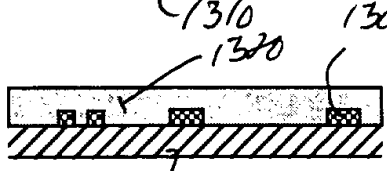


Fig 271

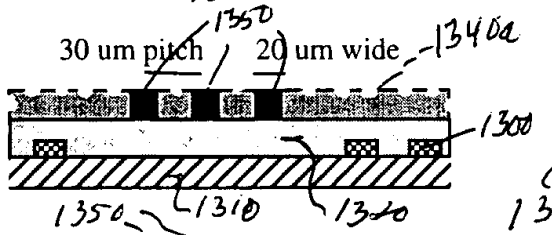


Fig 272

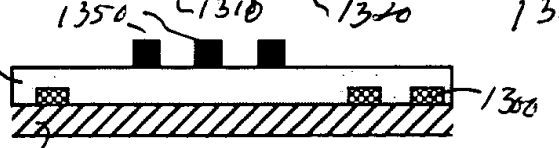


Fig 274

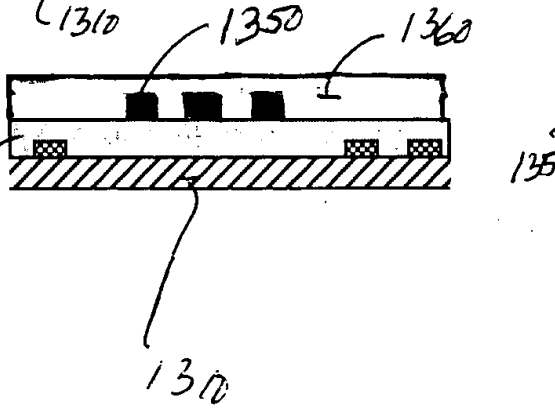


Fig 276

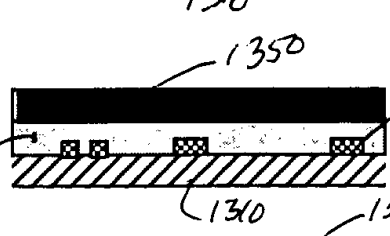


Fig 273

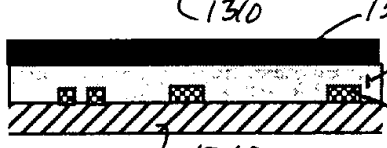


Fig 275

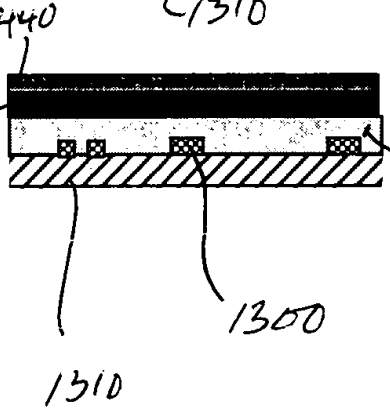
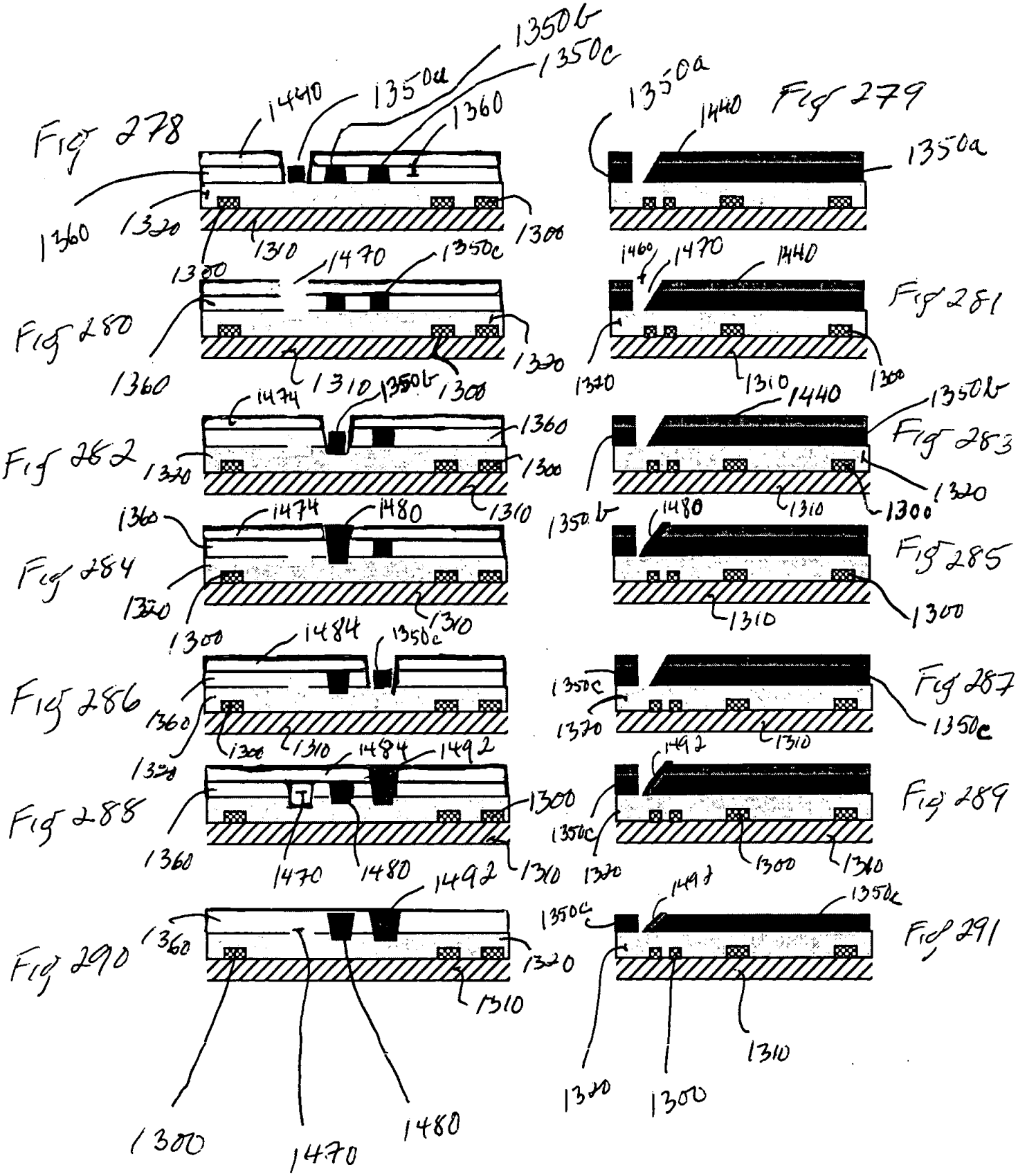
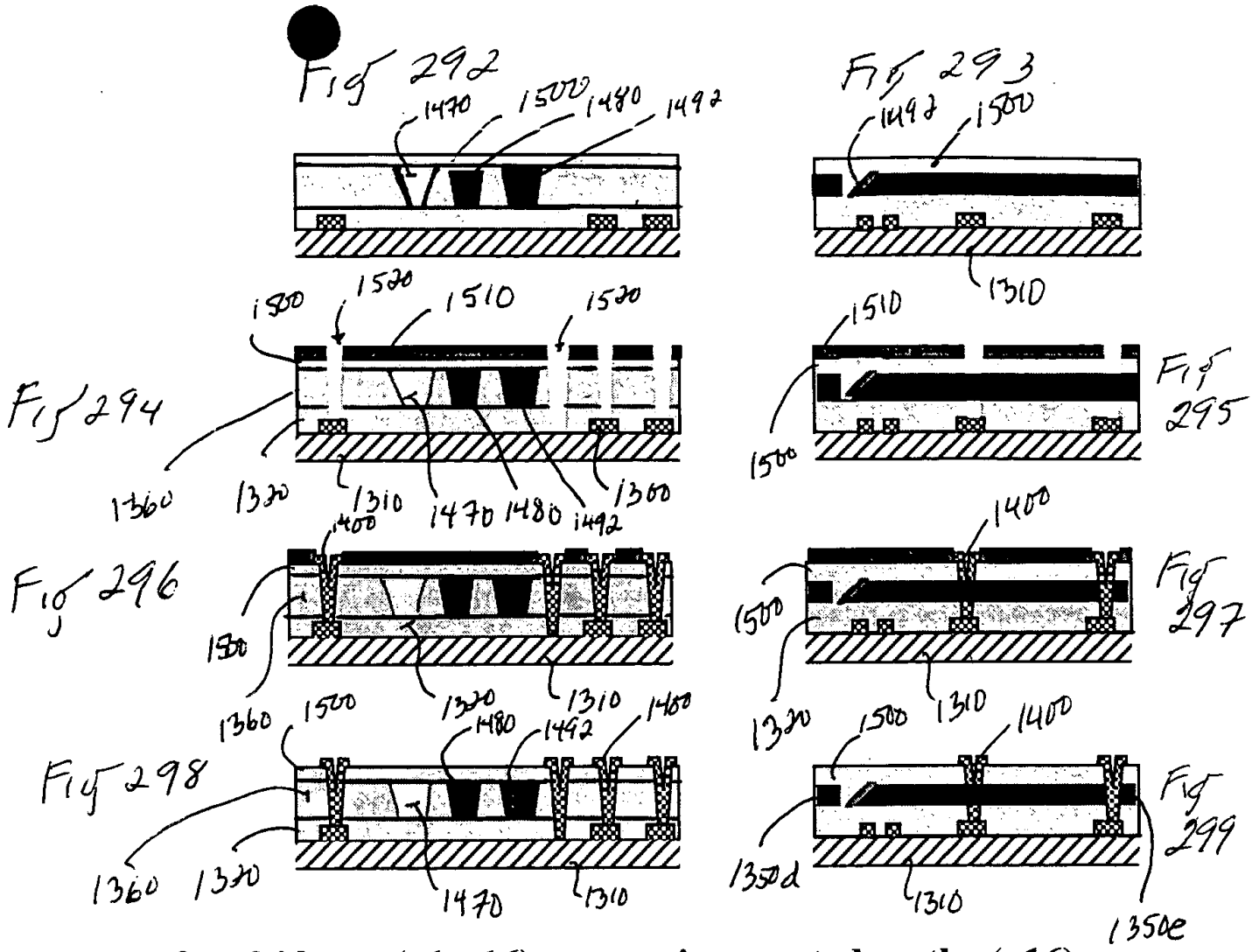


Fig 277





In the case of multi layer (a1-a16) process is repeated on the (a16).
-it is also possible to repeat (a3-a16) or (a1, a3-a16)

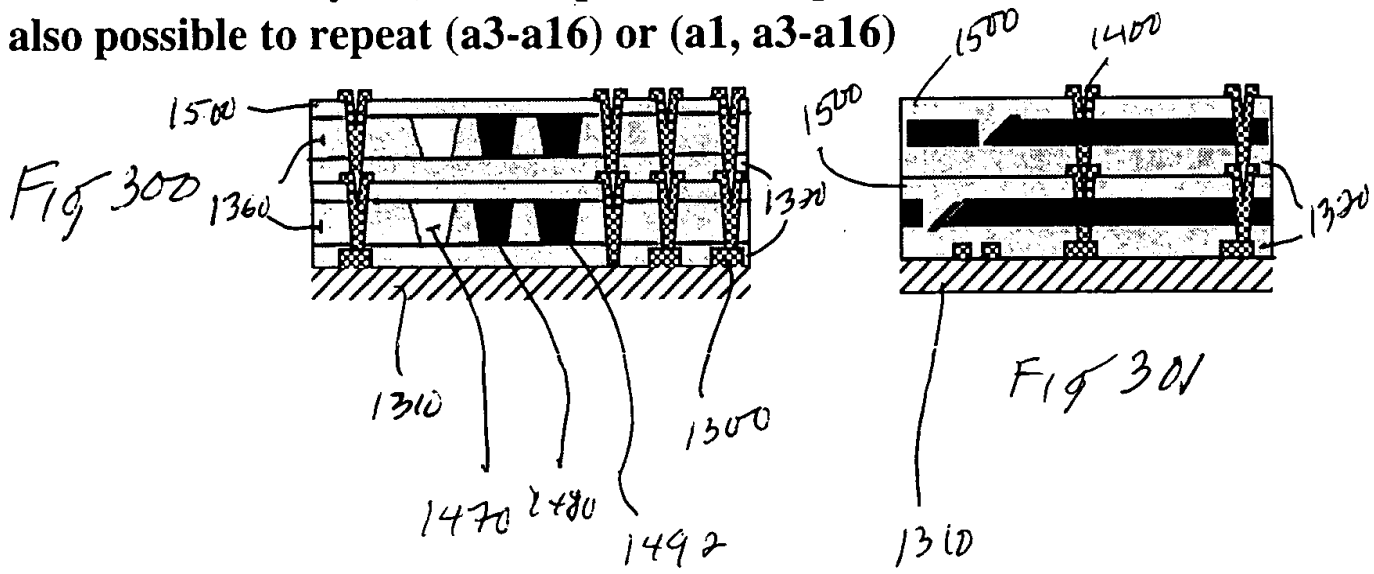


Fig 302

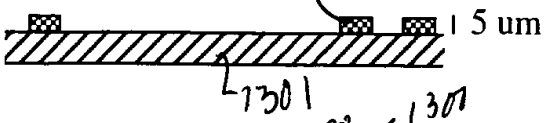


Fig 303

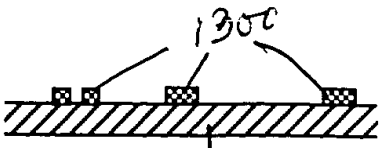


Fig 304

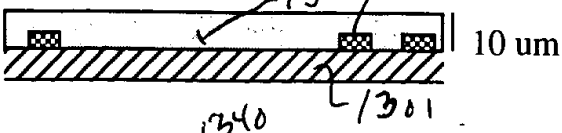


Fig 305

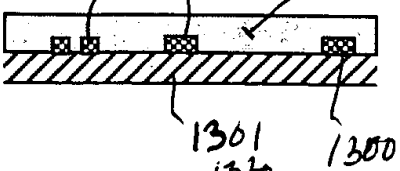


Fig 306

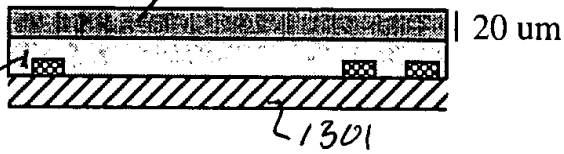


Fig 307

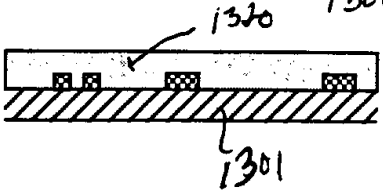


Fig 308

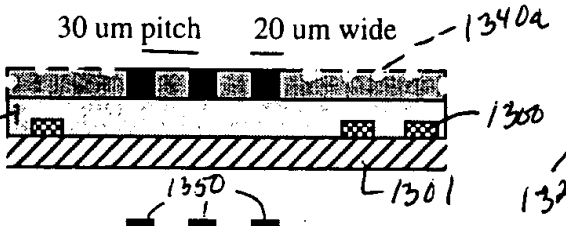


Fig 309

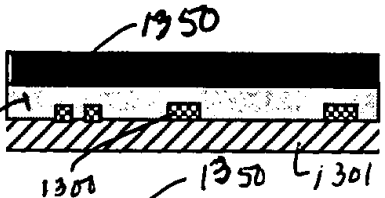


Fig 310

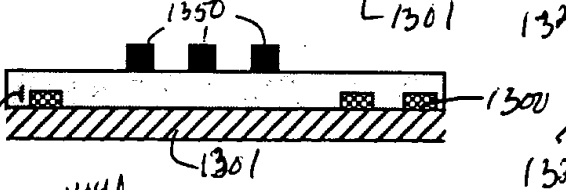


Fig 311

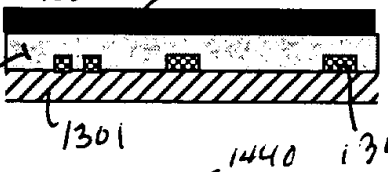


Fig 312

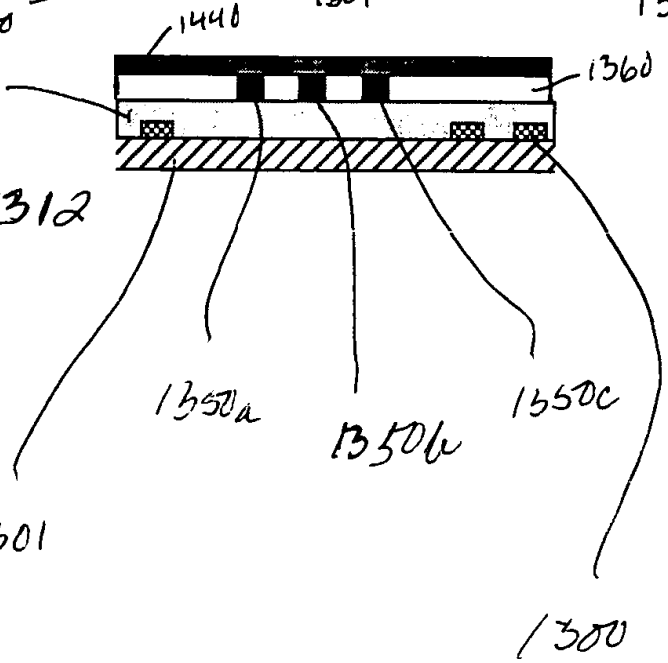
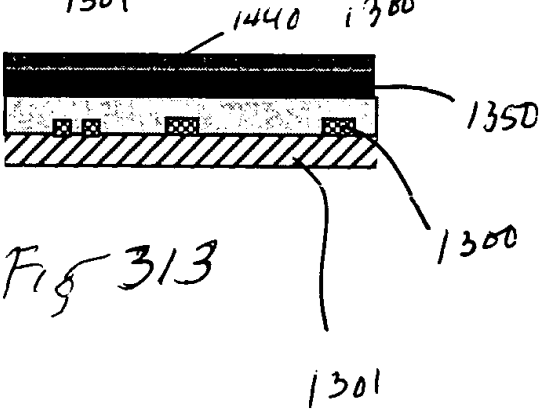


Fig 313



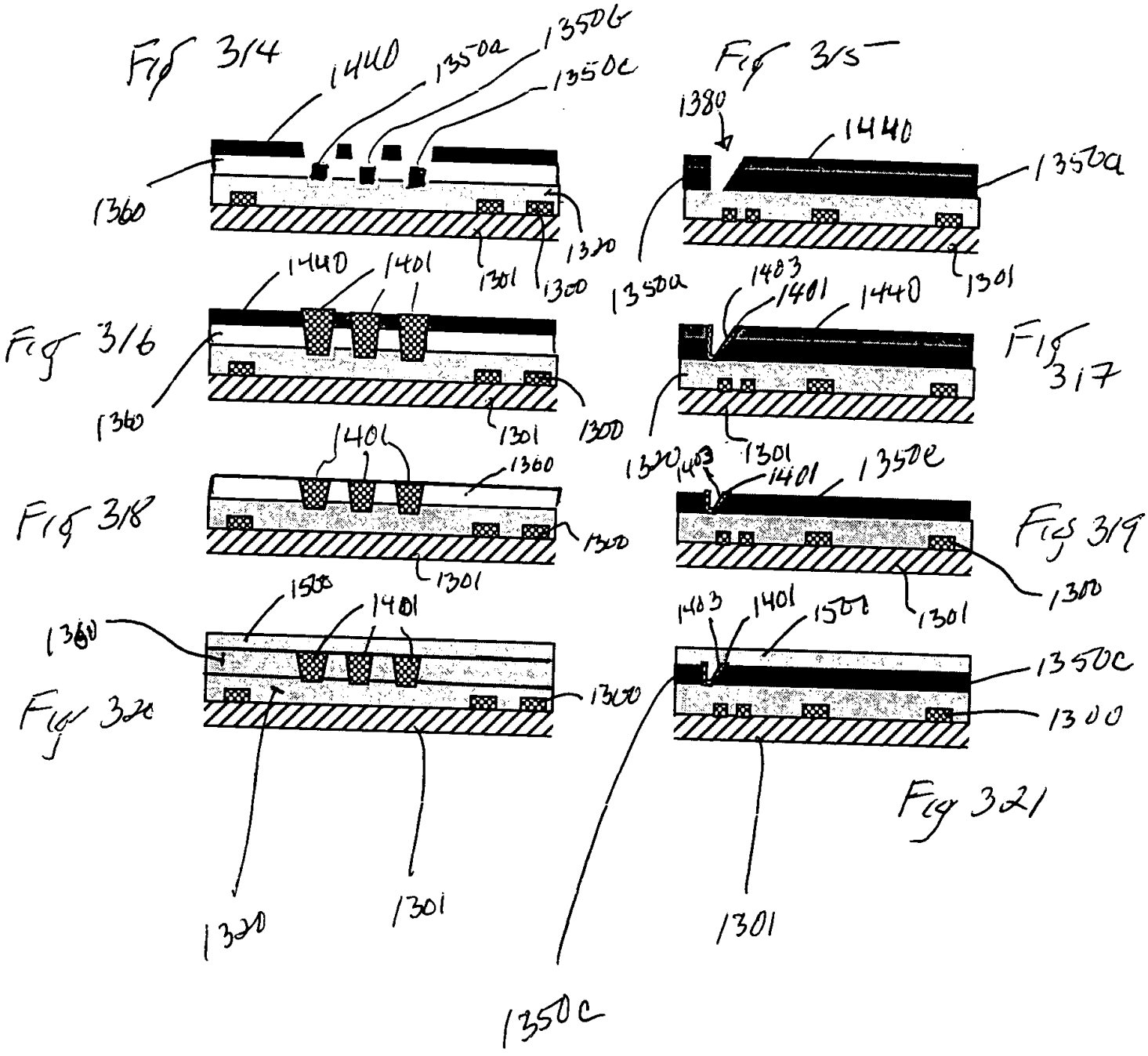


Fig 314
1440
1350a
1350c
1360
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1301
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Fig 315
1380
1440
1350a
1350a
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Fig 316
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Fig 318
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Fig 319
1401
1350c
1300
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1403
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1350c
1300
1301

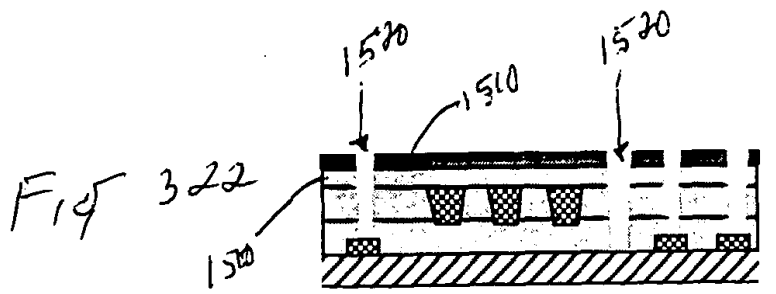


Fig 322

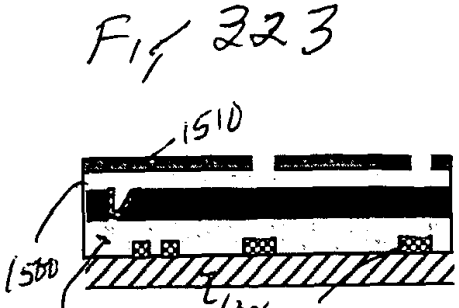


Fig 323

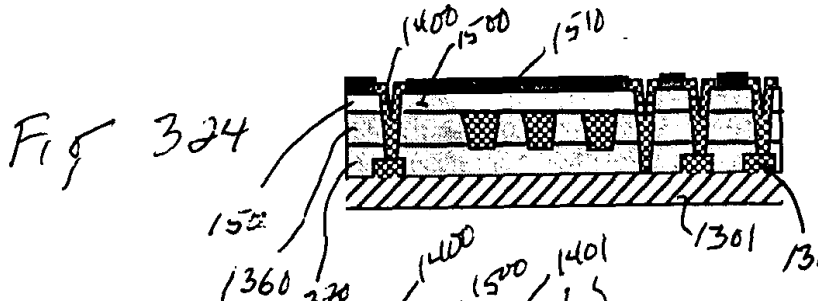


Fig 324

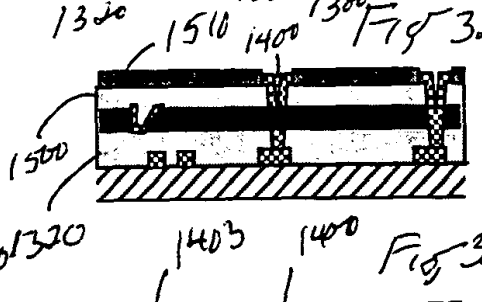


Fig 325

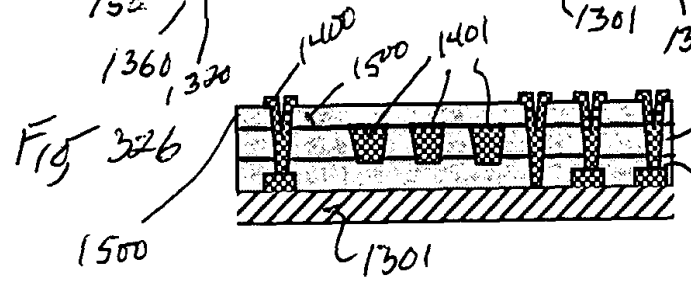


Fig 326

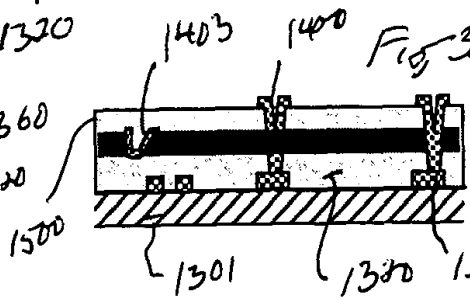


Fig 327

In the case of multi layer (a1-a12) process is repeated on the (a12).
-it is also possible to repeat (a3-a12) or (a1, a3-a12)

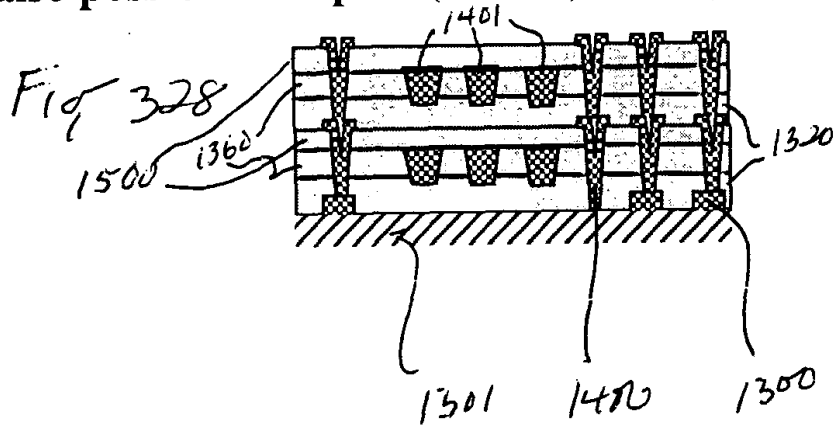


Fig 328

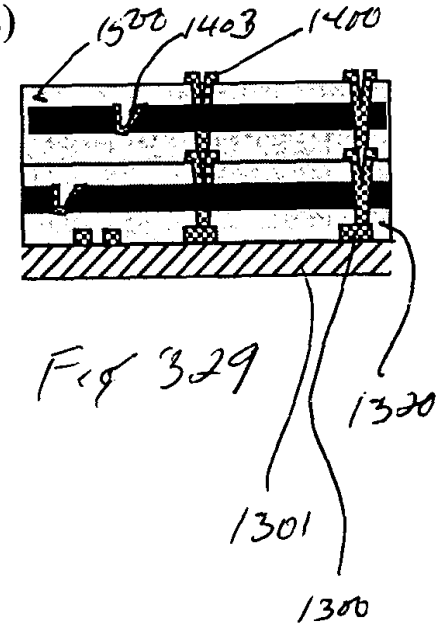


Fig 329

Invented Corner Turning Structure (A)

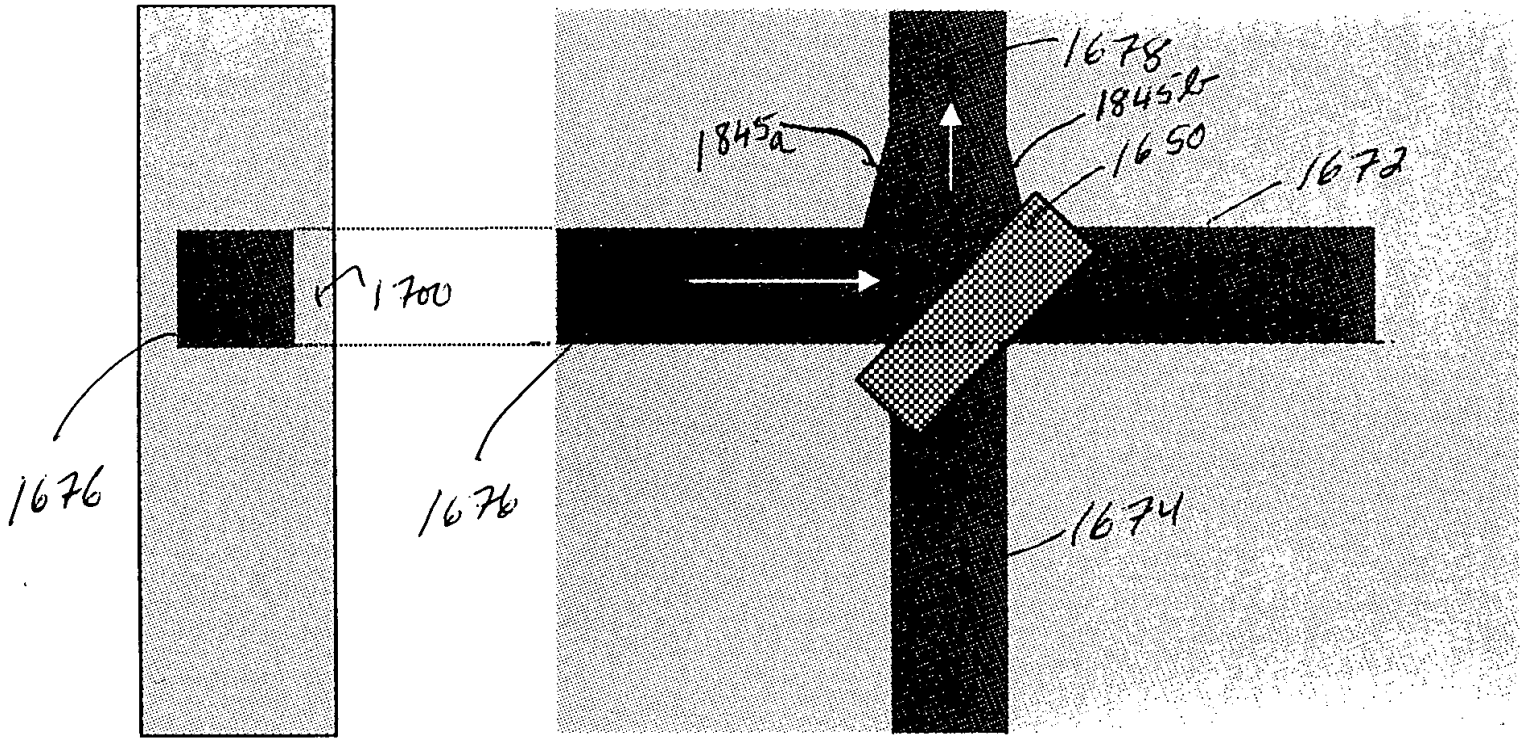


Fig 374

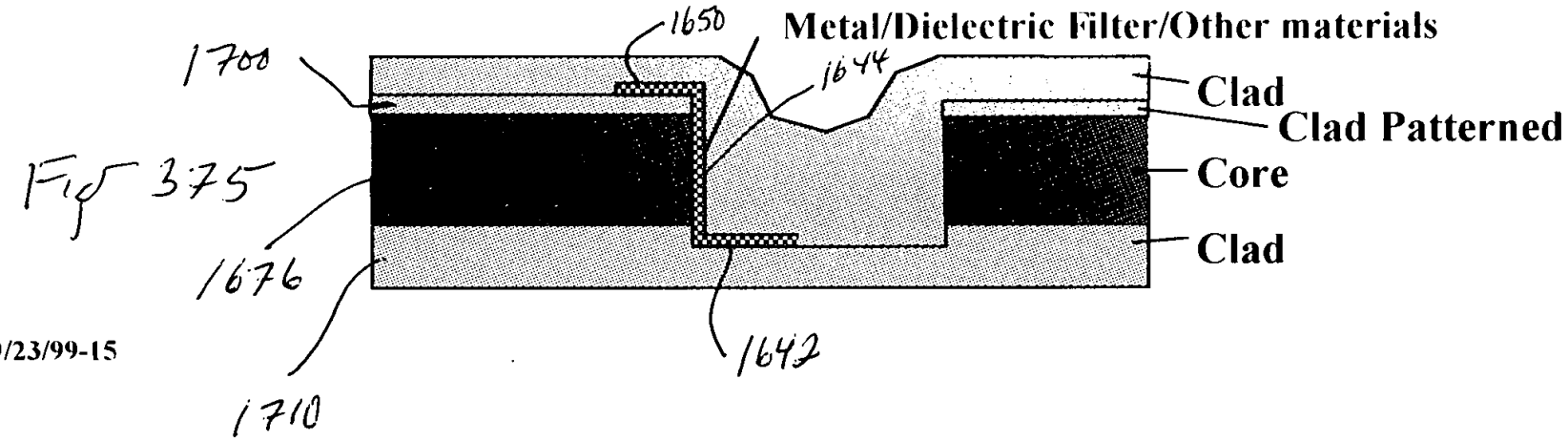
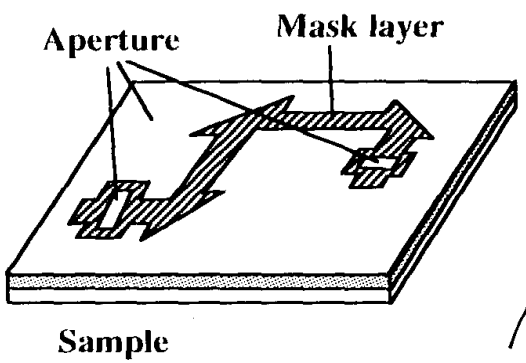


Fig 375

Fig. Add-9/23/99-15

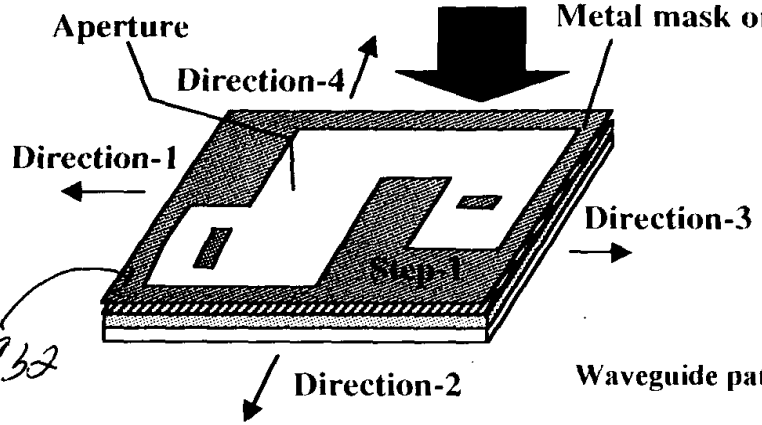
MNA, MNE Example for Add2 example

Fig 370



Excimer laser (or ion beam) with vertical incident angle

Fig 371



Excimer laser (or ion beam) with tilted incident angle

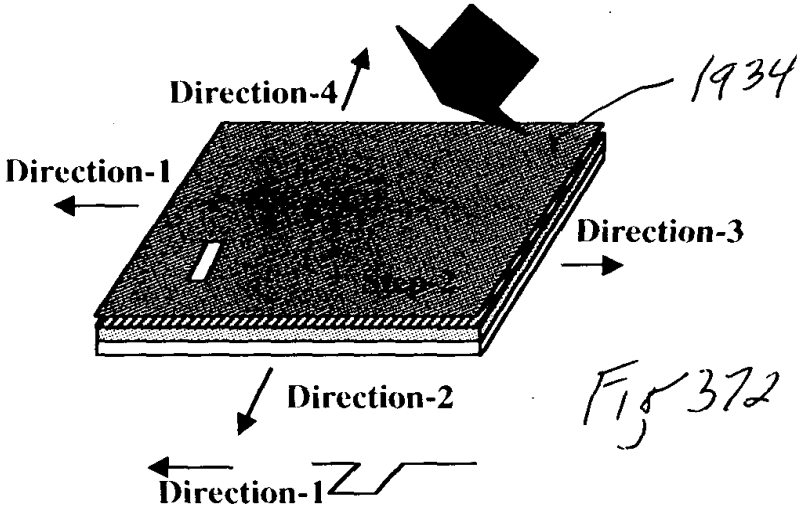


Fig 372

Fig 373

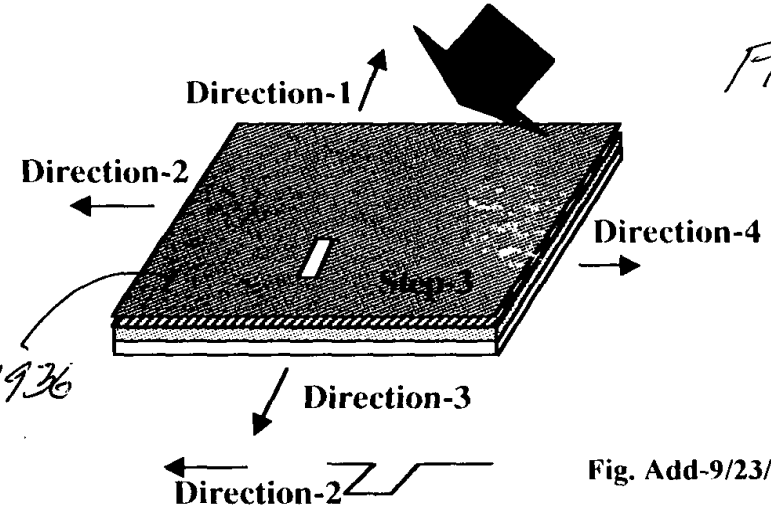


Fig. Add-9/23/99-10

Fig 350

Another Process Flow for Structure (II)

Buffer/Clad/Core/Clad
Mask formation
For Waveguide/Coupler

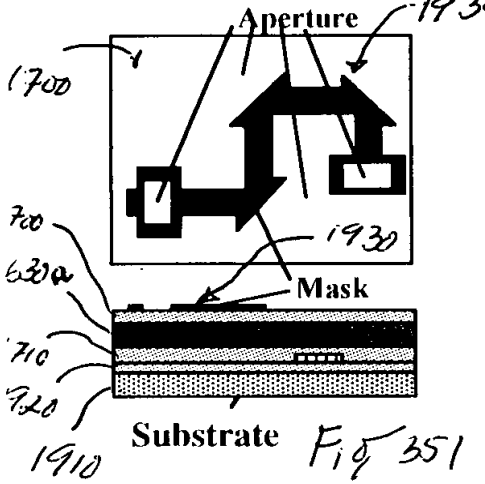


Fig 351

Waveguide Formation
MNA or MNE

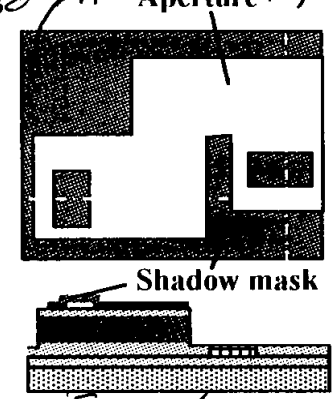


Fig 352 Fig 355 Fig 356

Coupler Formation I
MNA or MNE

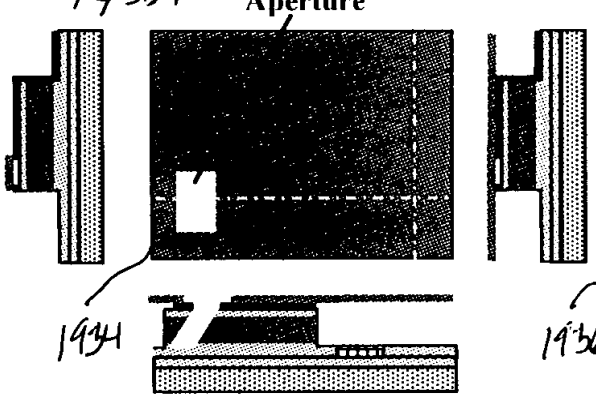


Fig 357 Fig 361 Fig 362

Coupler Formation II
MNA or MNE

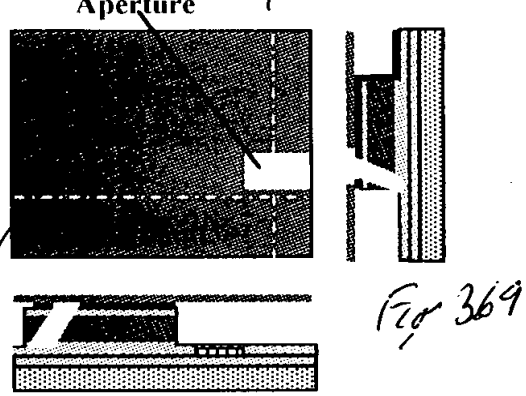


Fig 363 Fig 367 Fig 368 Fig 369

(MNA: Moving Neon Ablation)
(MNE: Moving Neon Etching)

Mask Removal/
Metal or
Dielectric Filteror
Other materials Depo

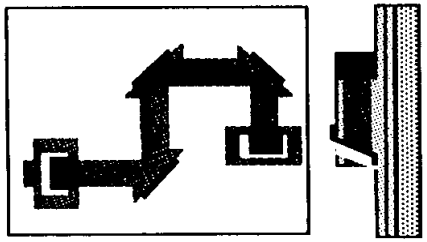


Fig 354

Clad

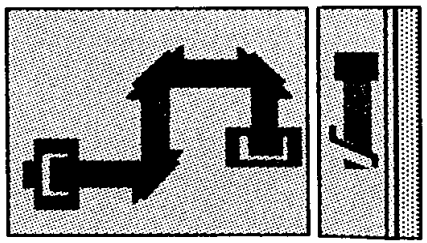


Fig 358 Fig 360

Metallization

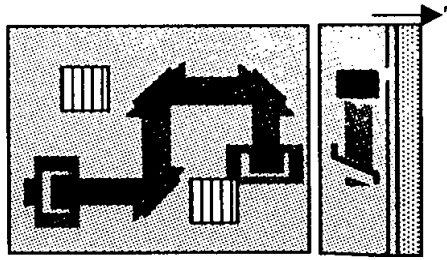


Fig 364 Fig 366

Z-Connection
Substrate Removal

Fig 353

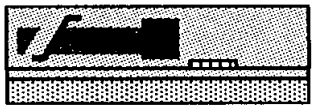


Fig 359

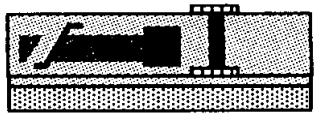


Fig 365

Fig. Add-9/23/99-9

Excimer Laser Ablation Example for Beveled Cut (2)

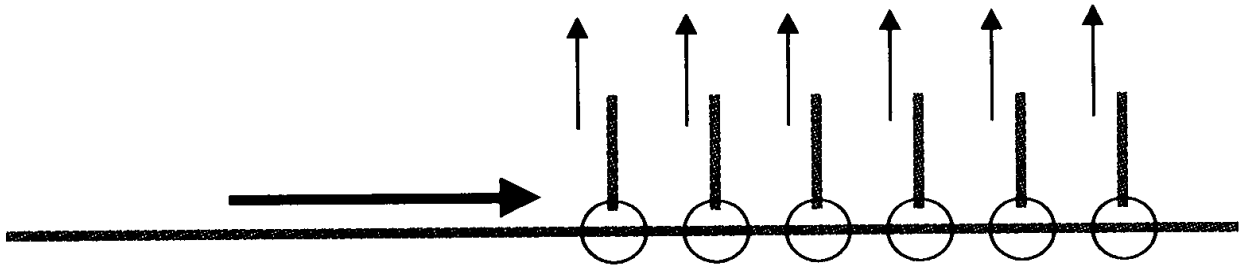


Fig 348

Beam Splitter

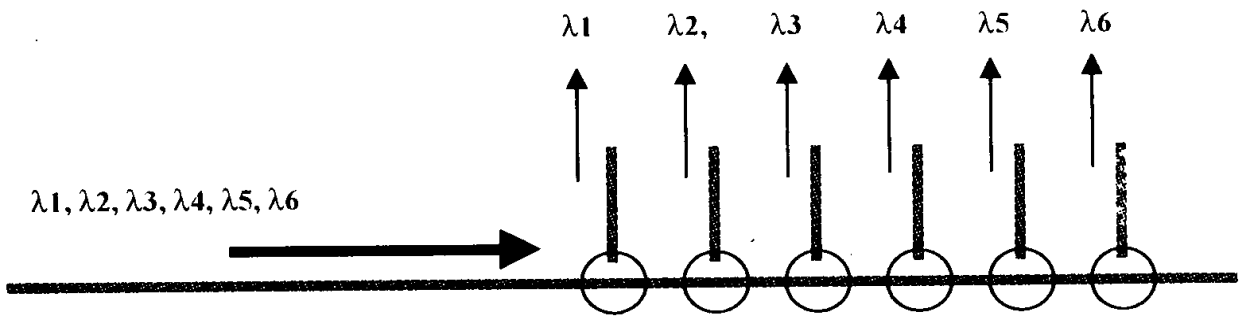


Fig 349

WDM DEMAX

Fig. Add-9/23/99-8

Invented Coupler Structure (II)

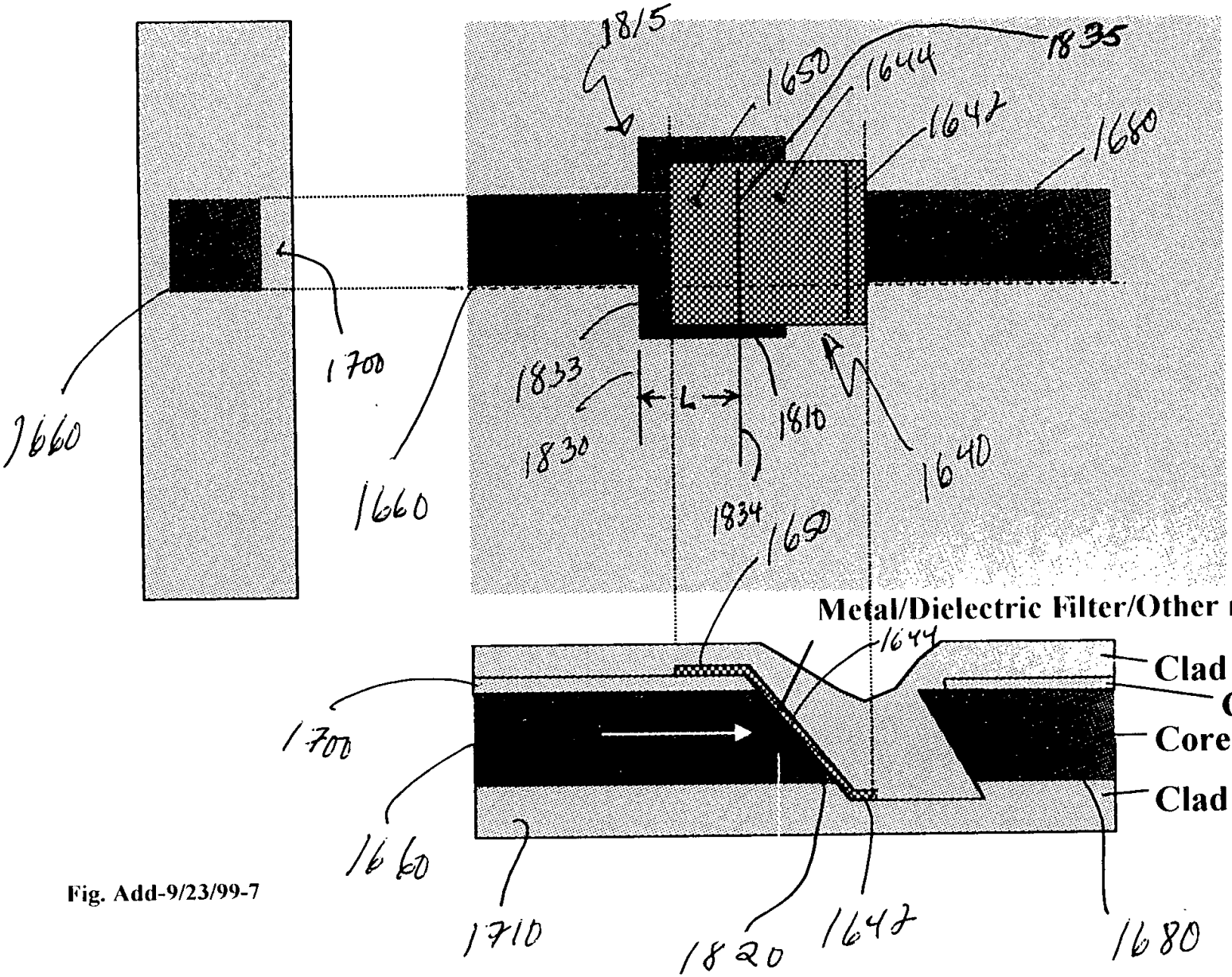


Fig 346.

Fig 347

Fig. Add-9/23/99-7

Invented Coupler Structure (I)

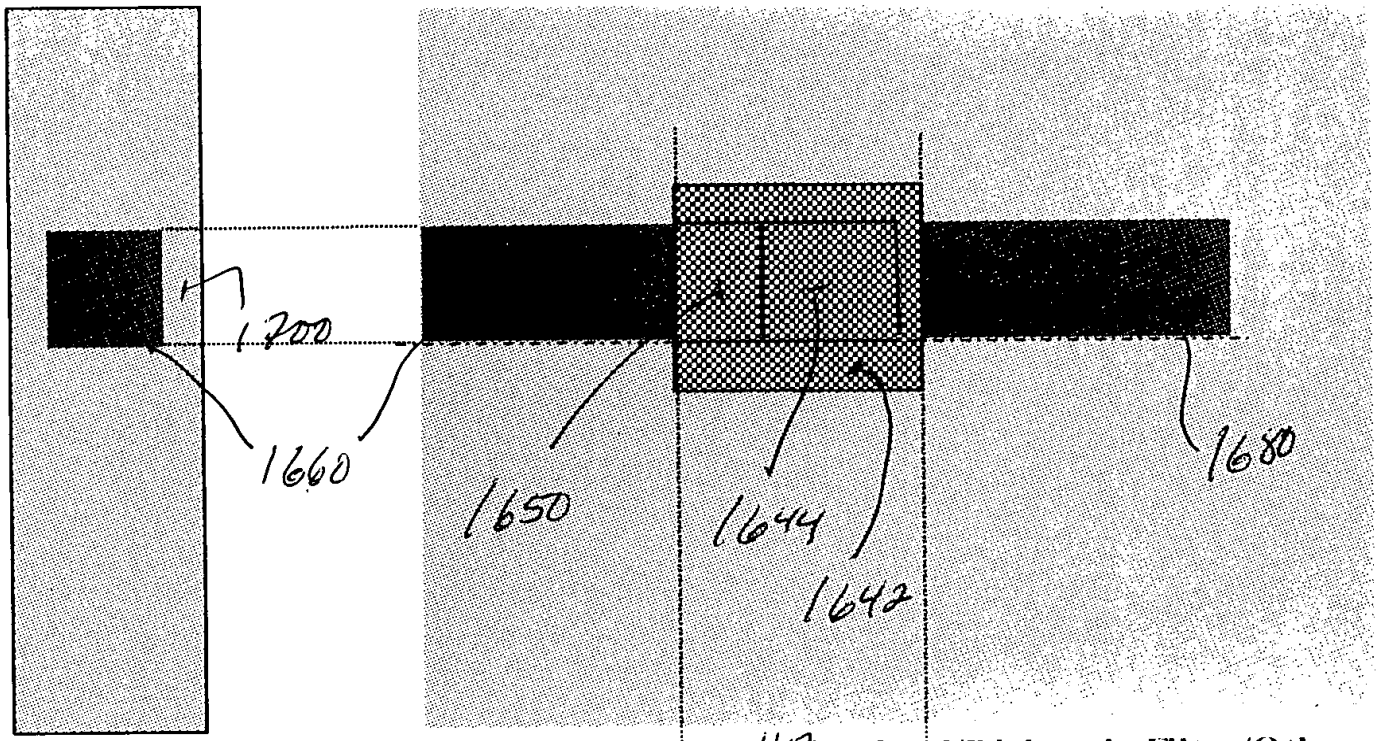


Fig 344

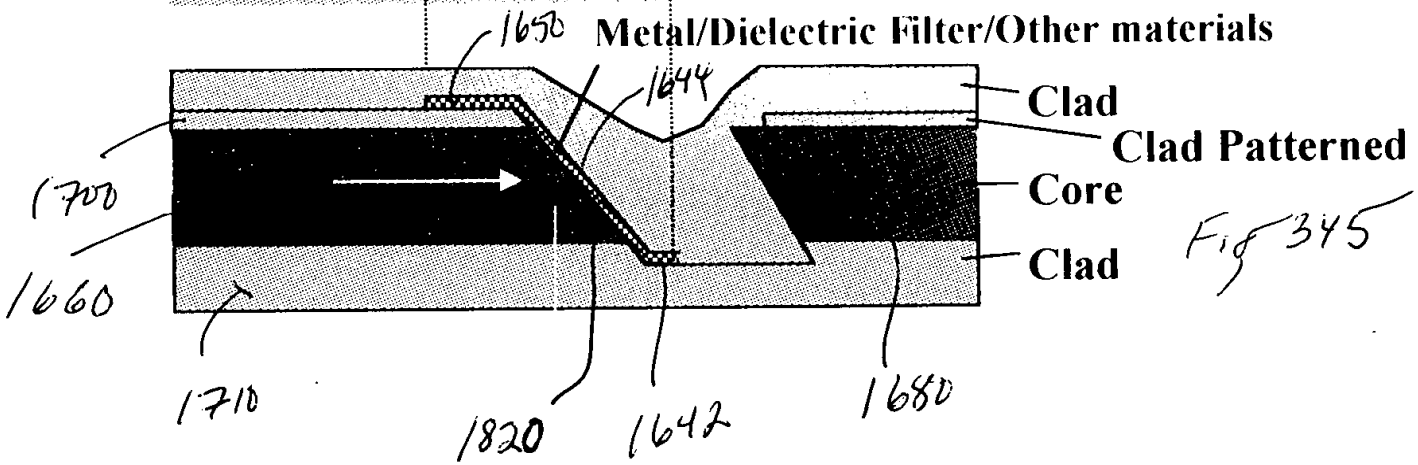


Fig 345

Fig. Add-9/23/99-6

Conventional Coupler Structure (I)

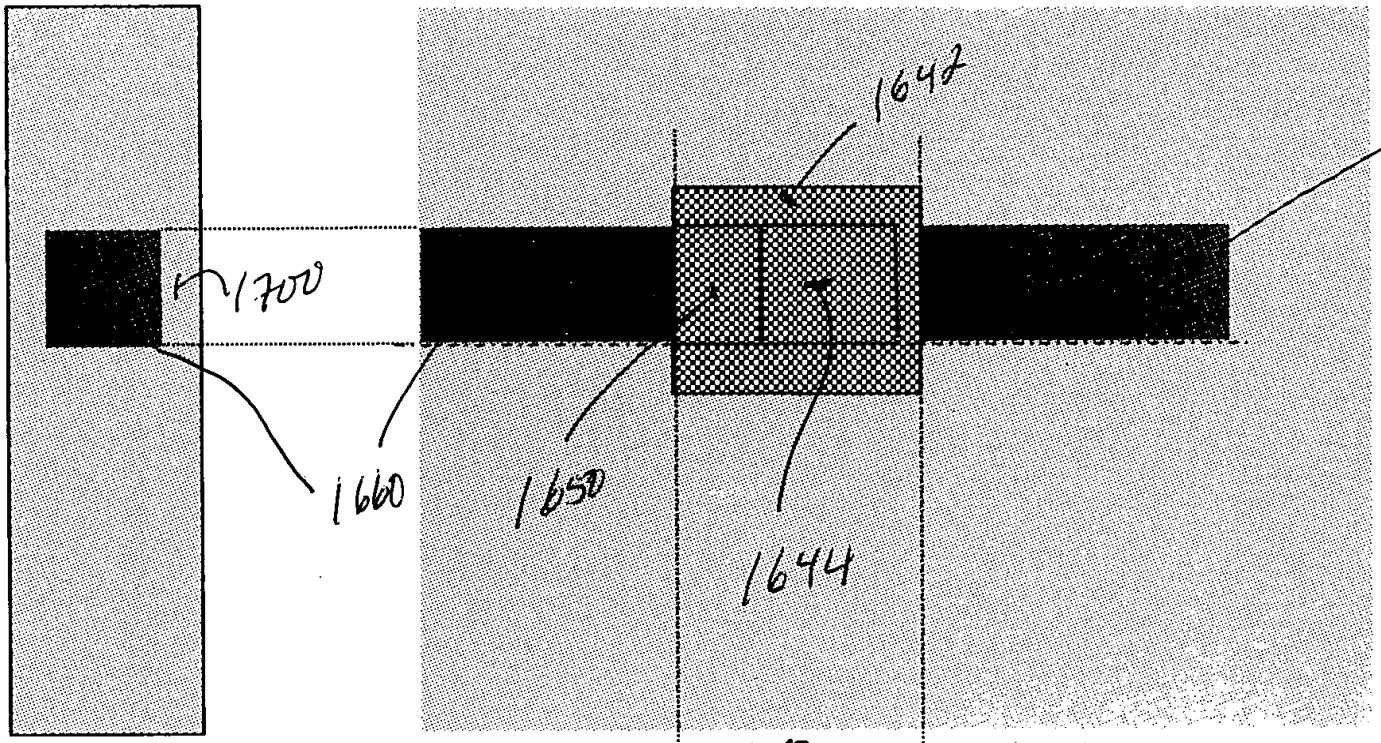


Fig 342

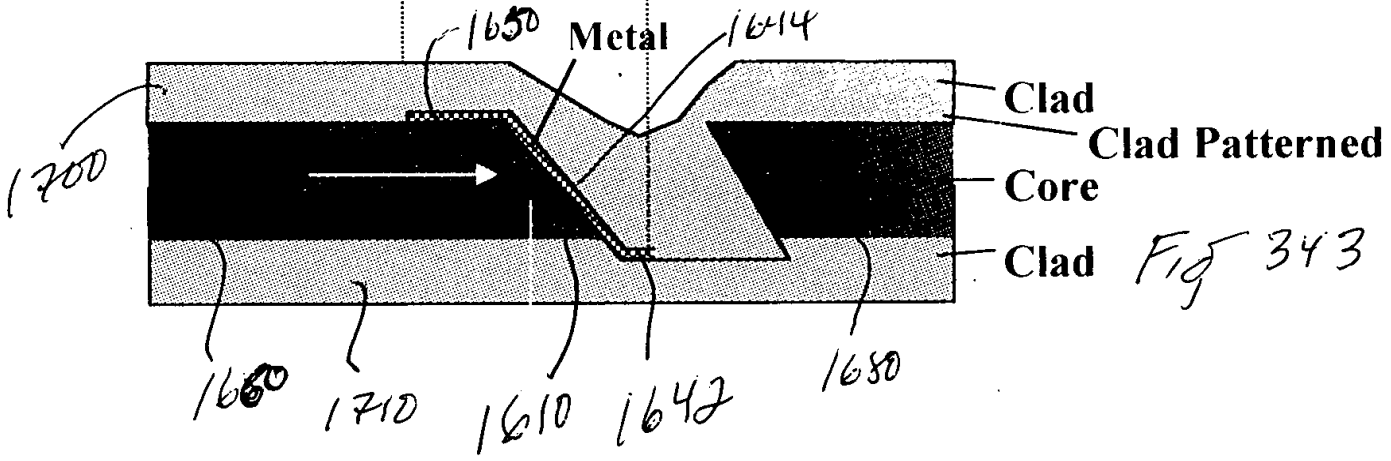


Fig 343

Fig. Add-9/23/99-5

Invented Corner Turning Structure (II)

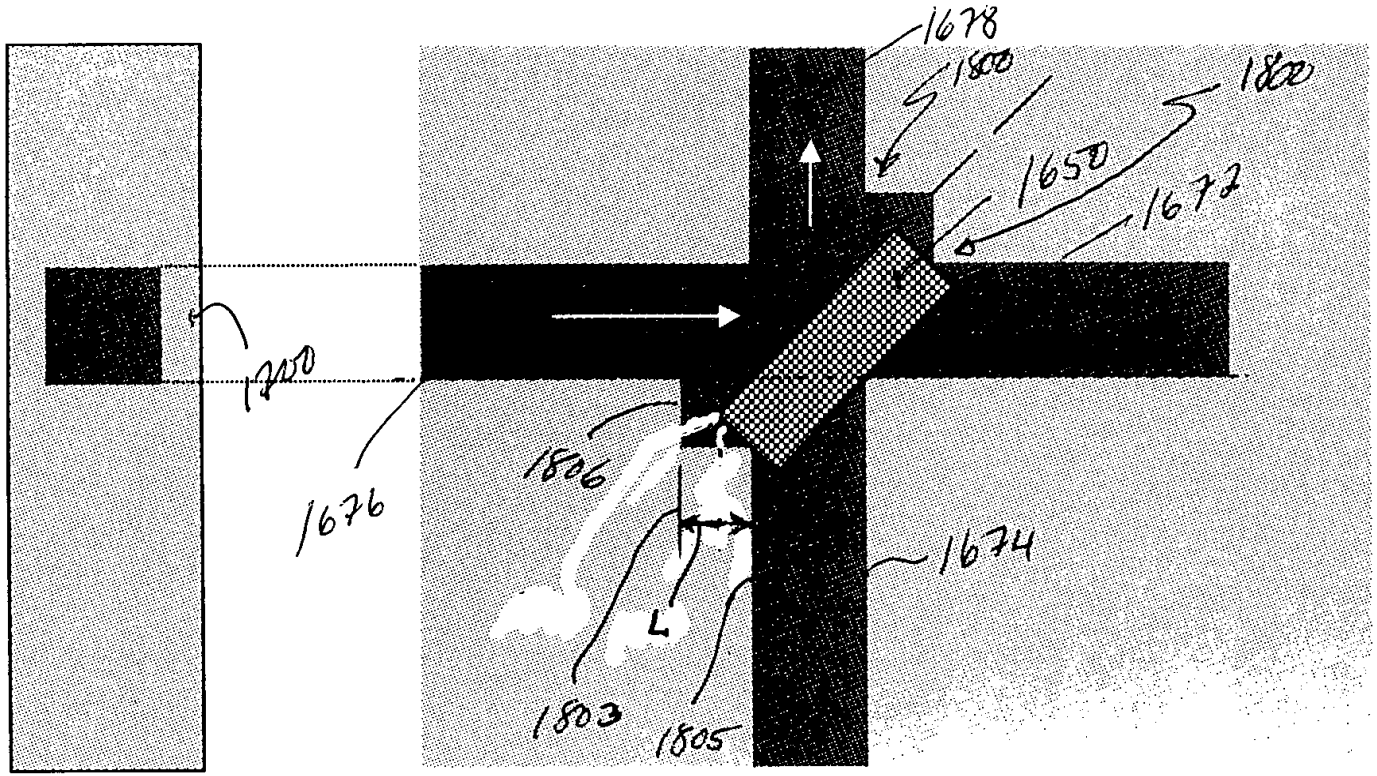


Fig 340

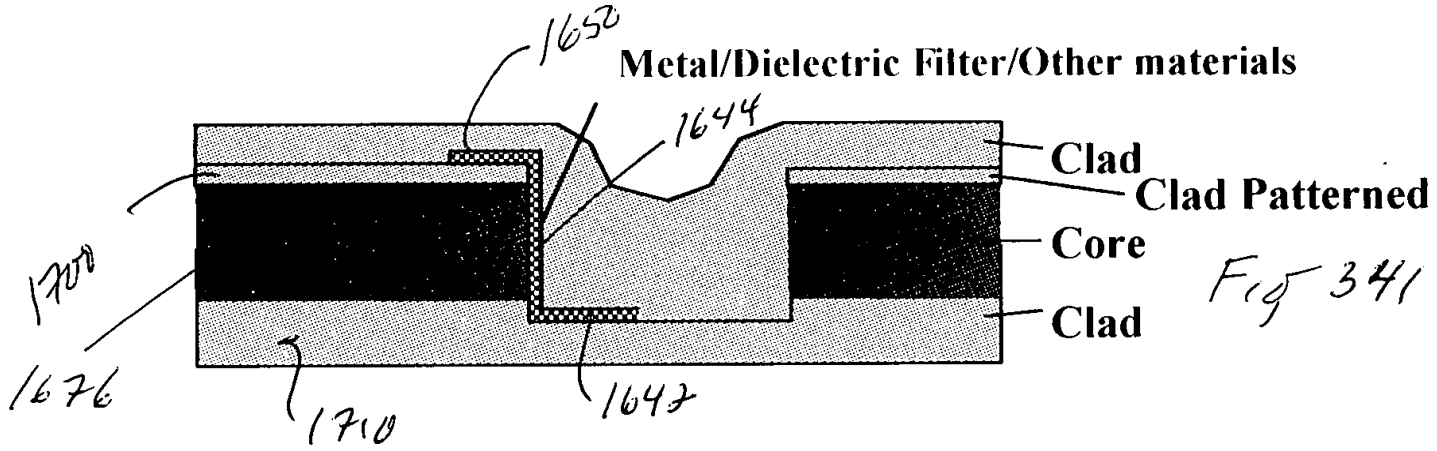


Fig 341

Invented Corner Turning Structure (I)

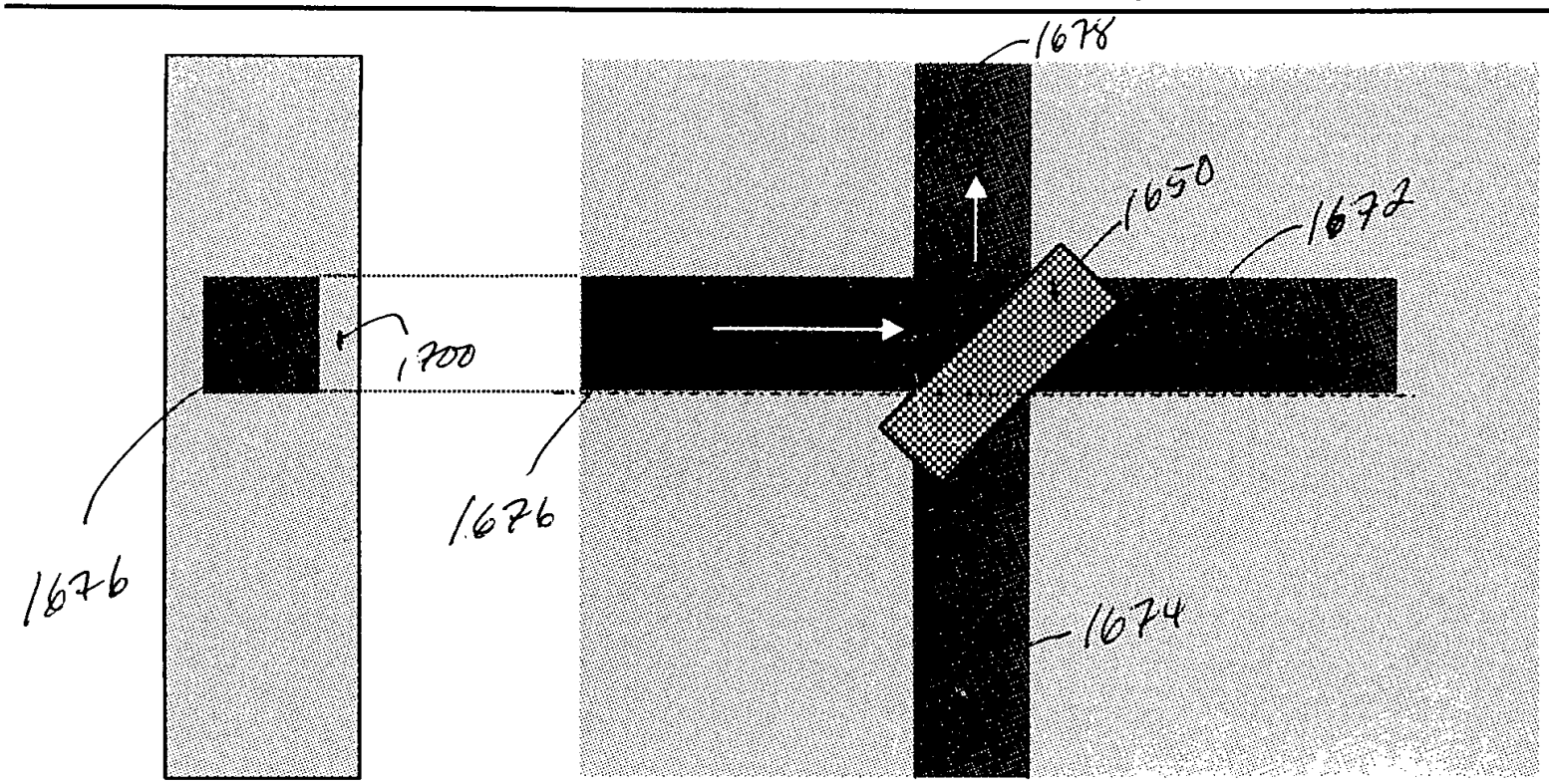


Fig 338

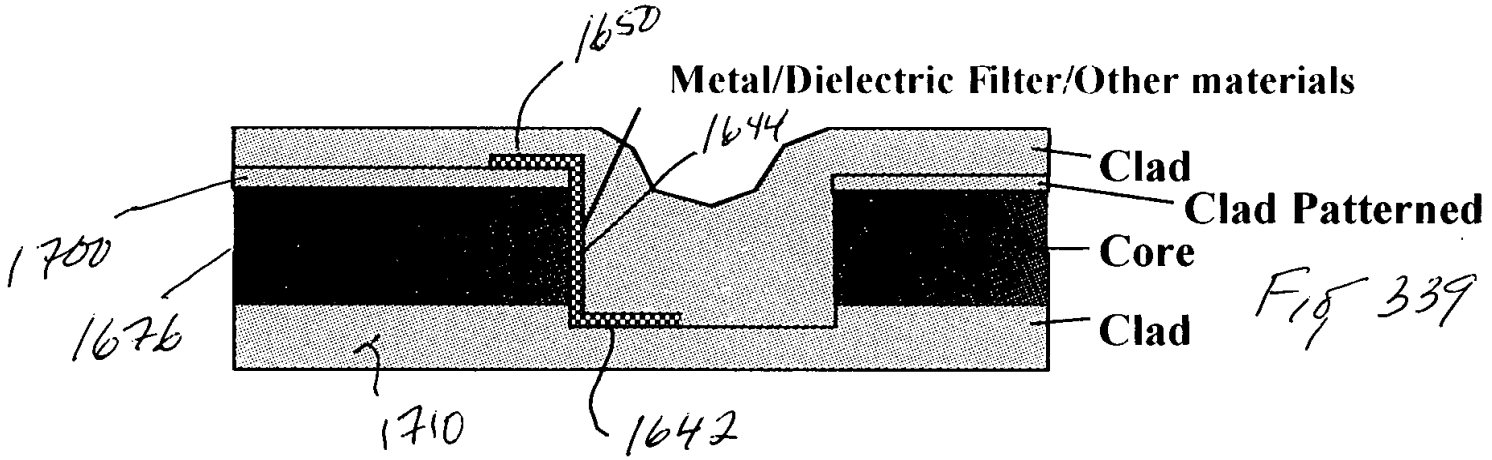


Fig 339

Fig. Add-9/23/99-3

Conventional Corner Turning Structure

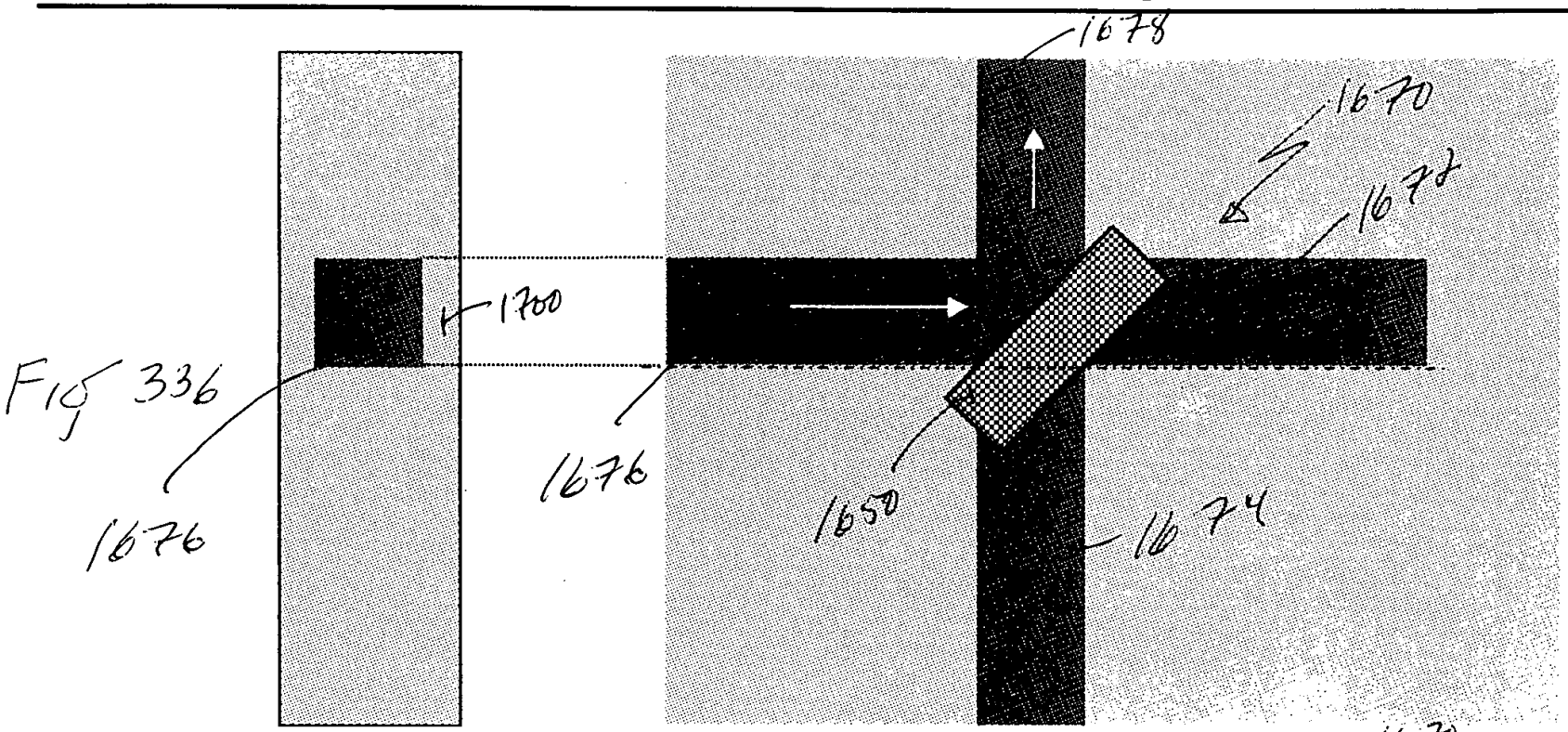


Fig 336

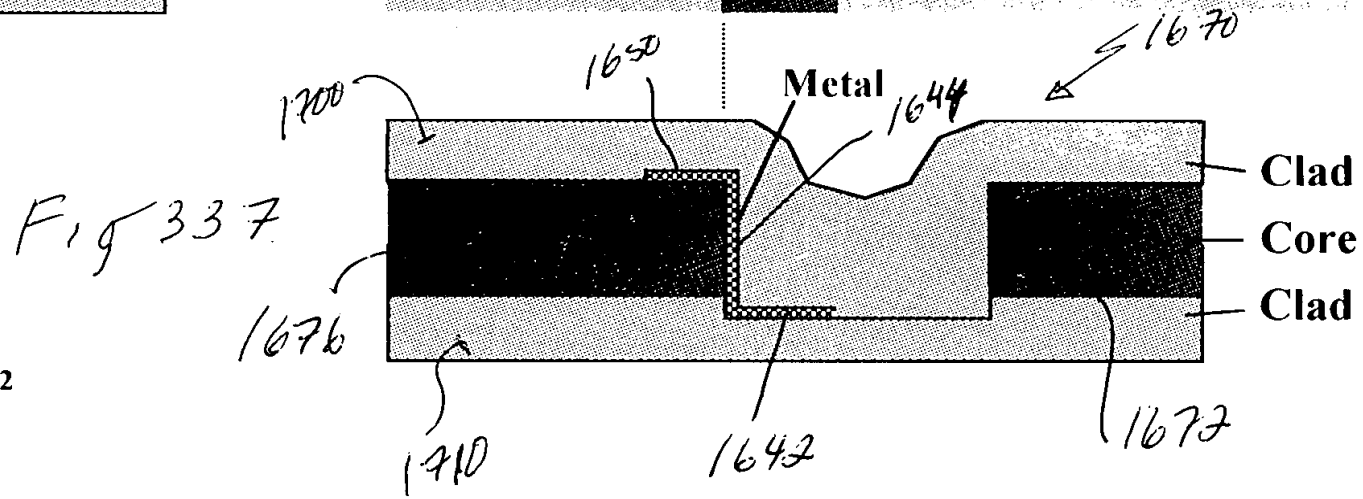
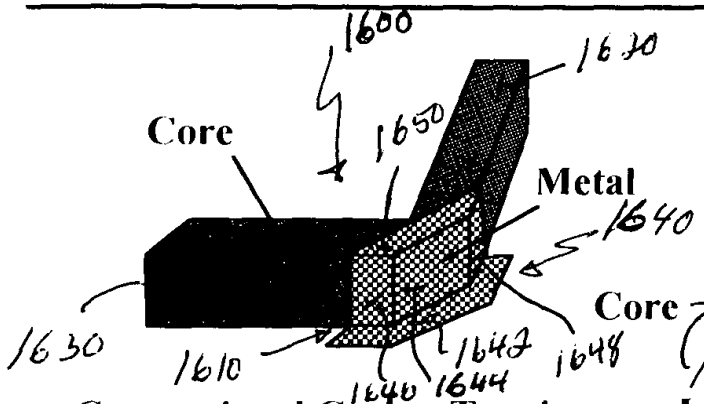


Fig 337

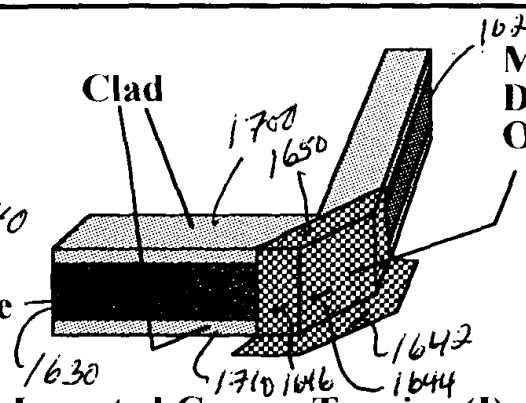
Fig. Add-9/23/99-2

Conventional and Invented Waveguide Structure Examples



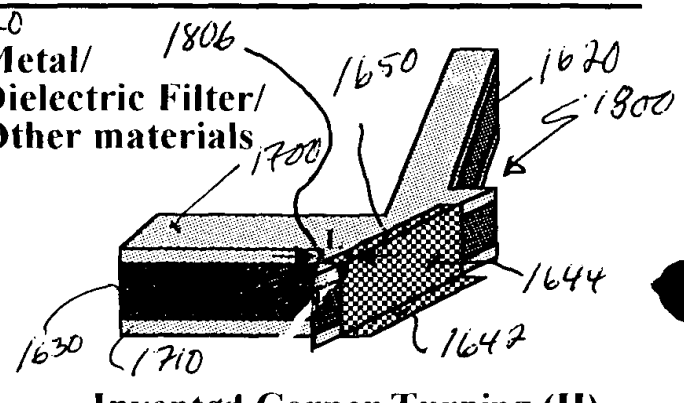
Conventional Corner Turning

Fig 330



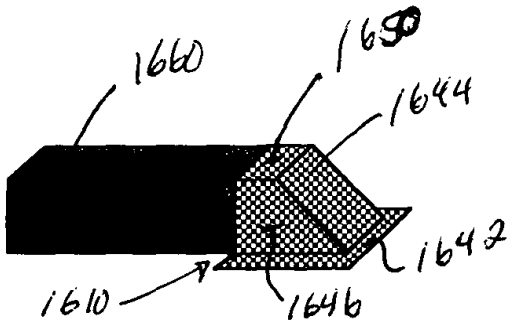
Invented Corner Turning (I)

Fig 332



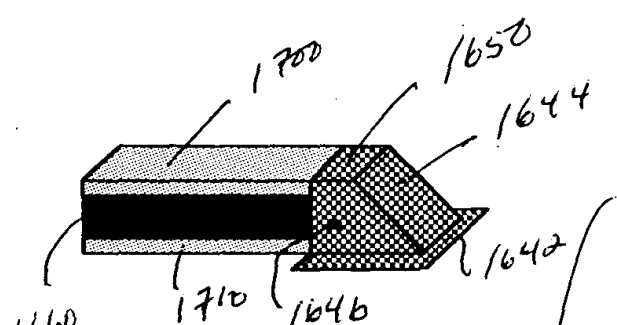
Invented Corner Turning (II)

Fig 334



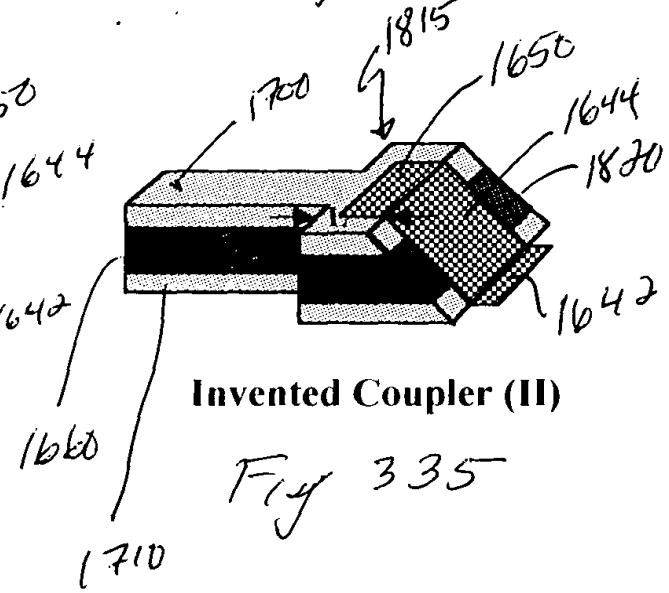
Conventional Coupler

Fig 331



Invented Coupler (I)

Fig 333



Invented Coupler (II)

Fig 335

Fig. Add-9/23/99-1

Example 3: Z waveguide Fab. Process 1

(a1) Metal pattern formation

(a2) Core coat9
[DuPont, AlliedSig , ORMOCERs or F-PI]

(a3) Z-WG core patterning
[UV-Exposure, mask-formation+RIE, Laser, or Dupont process]
Develpment
(for AlliedSig, ORMOCERs)

(a4) Clad coat
(for planarization viscosity adjust if necessary CMP)

(a5) Core coat
[DuPont, AlliedSig , ORMOCERs or F-PI]

(a6) WG core patterning
[UV-Exposure, mask-formation+RIE, Laser, or Dupont process]
Develpment
(for AlliedSig, ORMOCERs)

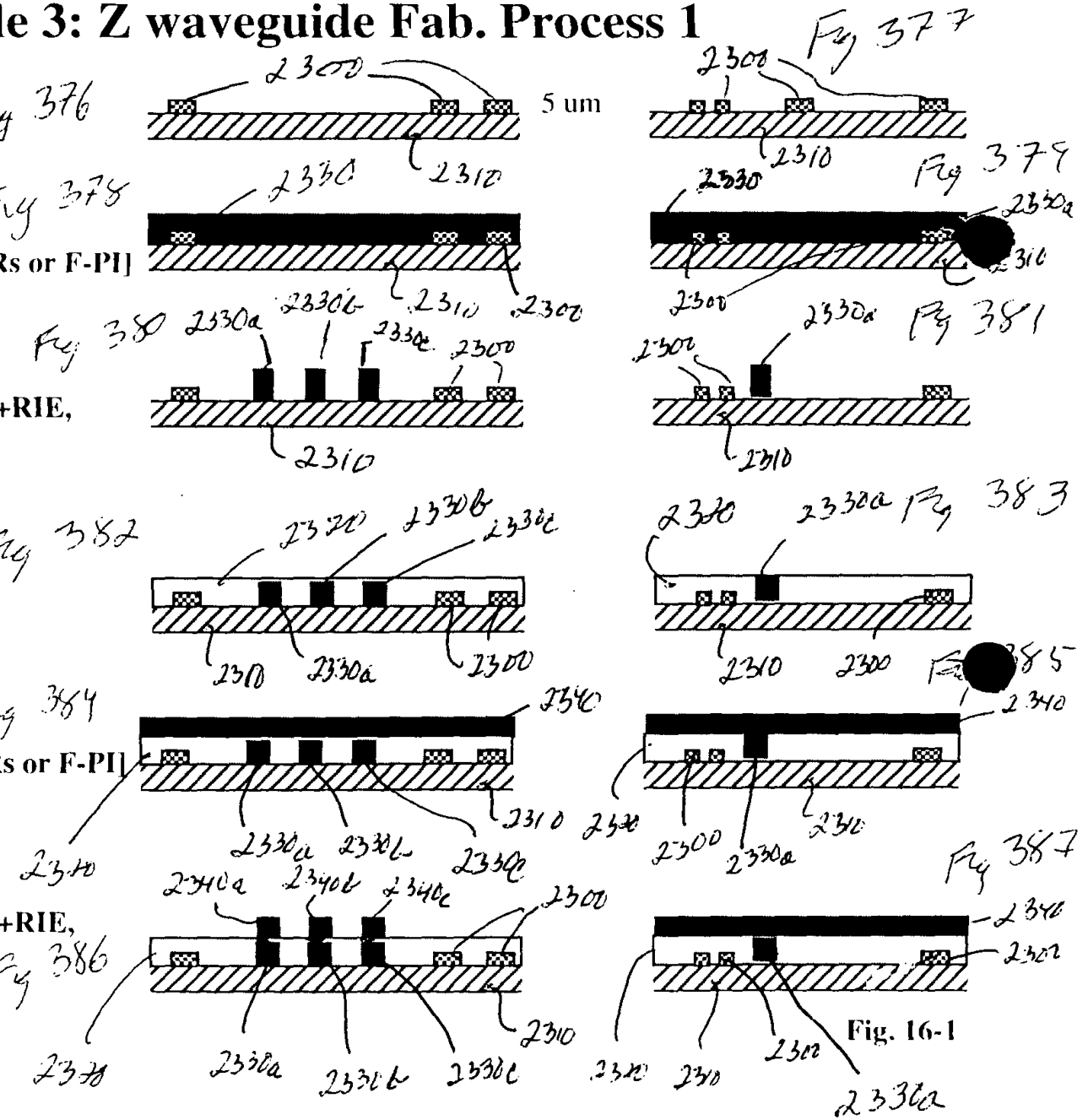
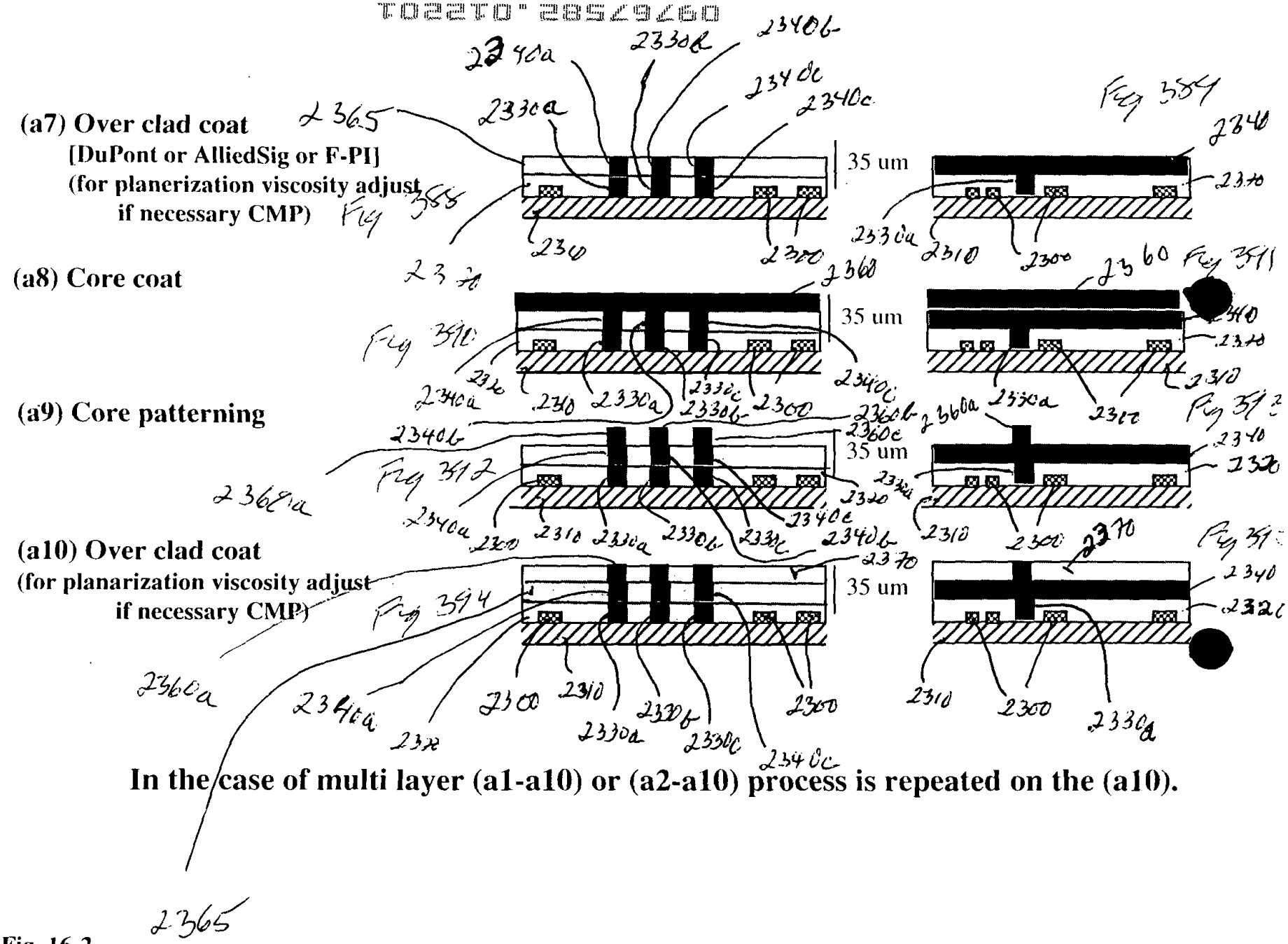


Fig. 16-1



In the case of multi layer (a1-a10) or (a2-a10) process is repeated on the (a10).

Fig. 16-2

Example 4: Z waveguide Fab. Process 2

(a1) Metal pattern formation

(a2) Clad coat
[DuPont, AlliedSig , ORMOCERs or F-PI]

(a3) Clad patterning
[UV-Exposure, mask-formation+RIE, Laser or Dupont process]
Develpment
(for AlliedSig, ORMOCERs)

(a4) Core coat
(for planarization viscosity adjust if necessary CMP)

(a5) WG core patterning
[UV-Exposure, mask-formation+RIE, Laser or Dupont process]
Develpment
(for AlliedSig, ORMOCERs)

(a6) Over clad coat
[DuPont or AlliedSig or F-PI]
(for planerization viscosity adjust if necessary CMP)

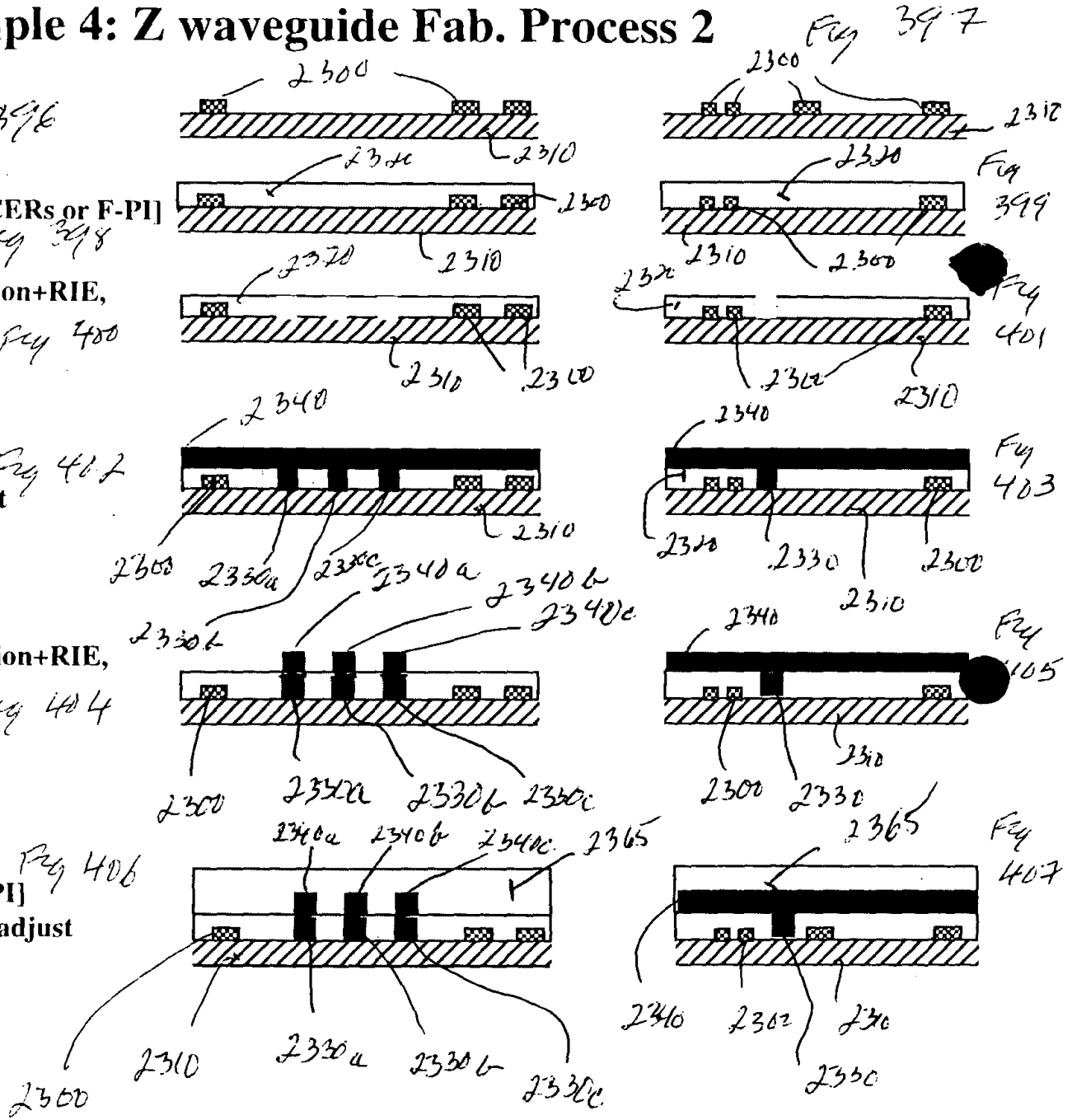


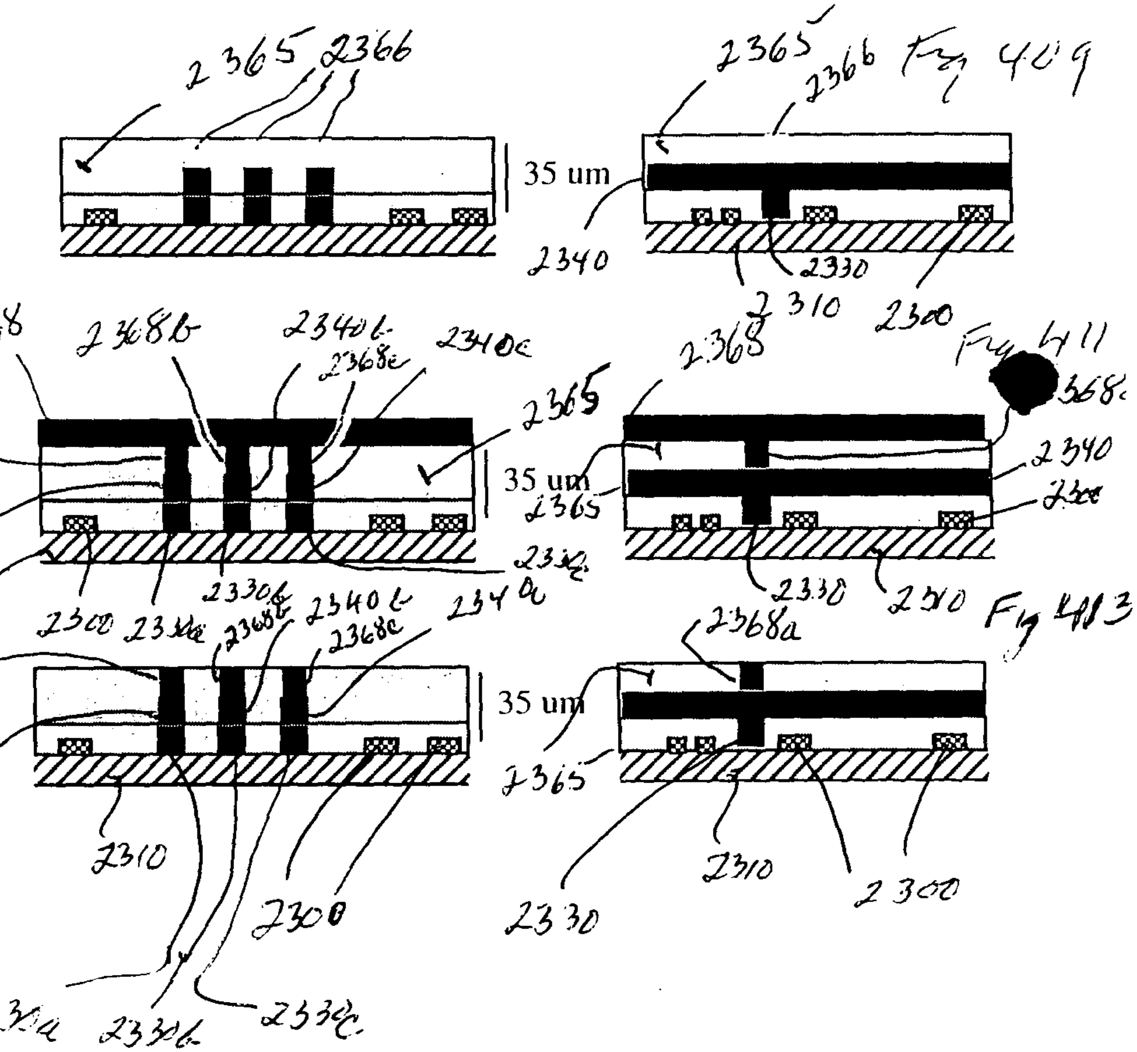
Fig. 17-1

(a7) Clad patterning
[UV-Exposure, mask-formation+RIE,
Laser or Dupont process]
Develpment
(for AlliedSig, ORMOCERs)

(a8) Core coat
(for planarization viscosity adjust
if necessary CMP)

or

(a8) Core coat and CMP



In the case of multi layer (a1, a5-a8) or (a5-a8) process is repeated on the (a8).

Fig. 17-2

Fig. 414

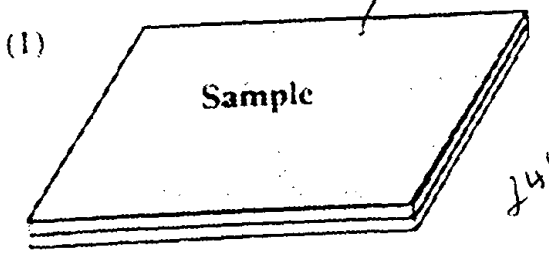


Fig. 415

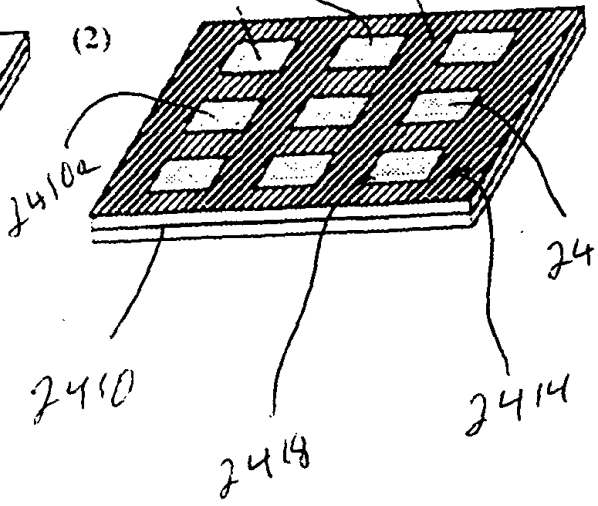
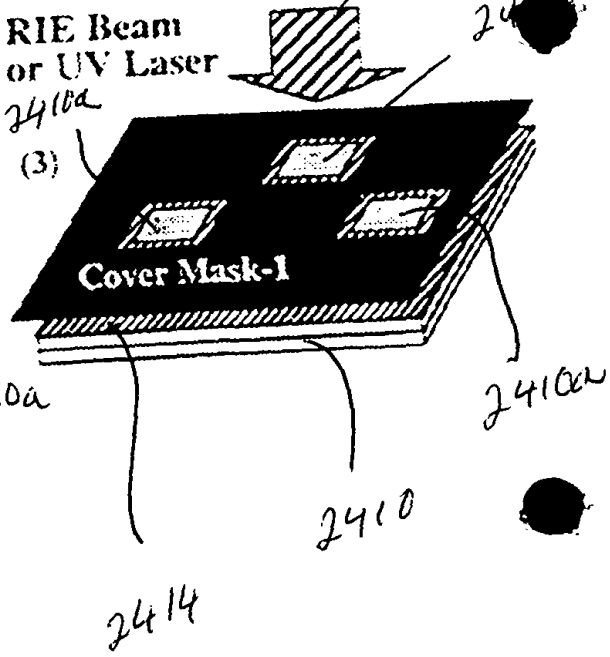
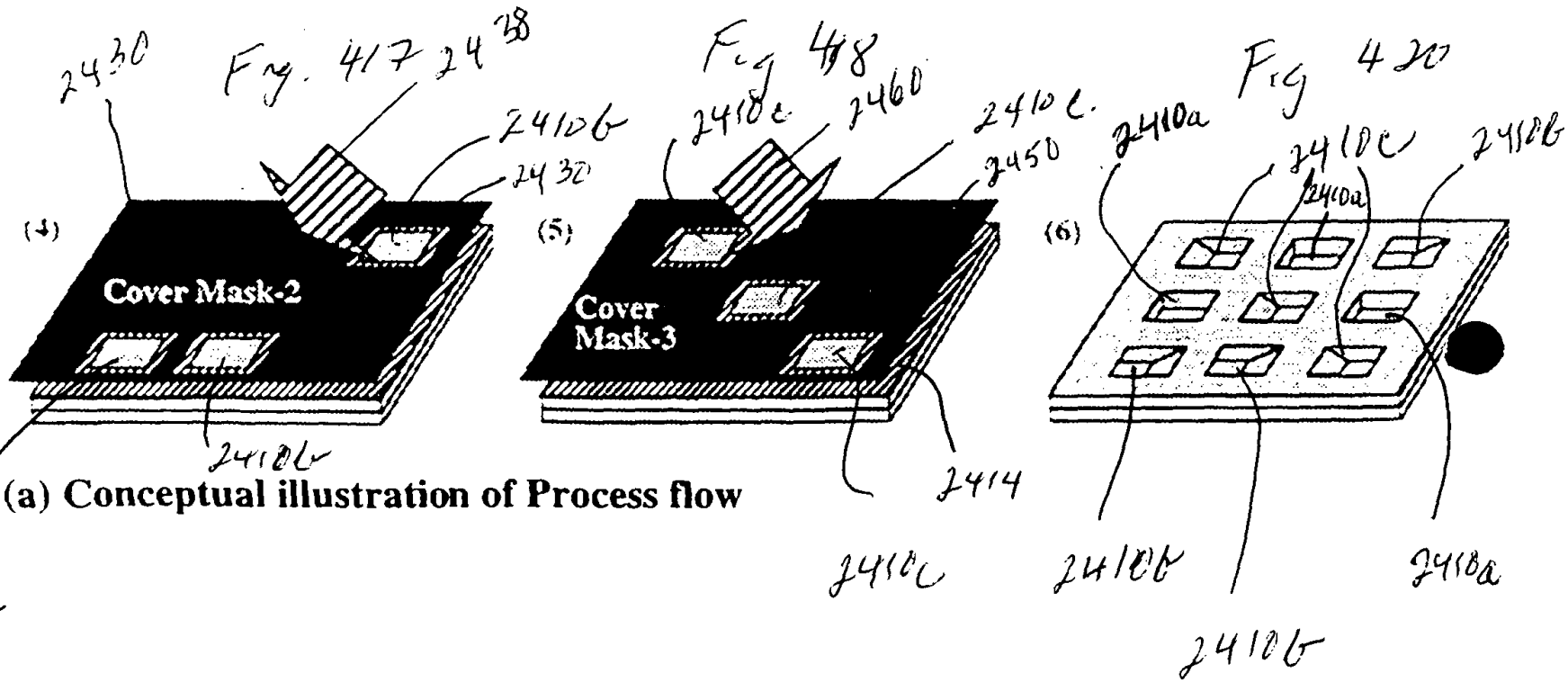


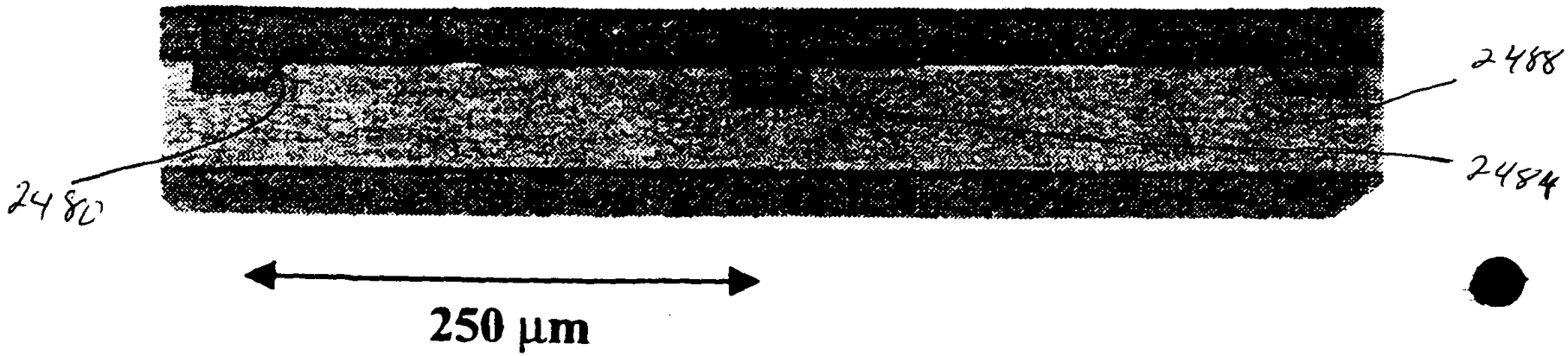
Fig. 416





(a) Conceptual illustration of Process flow

Fig. 42



(b) Trench wall formation of three different angles